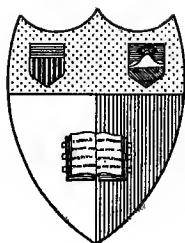


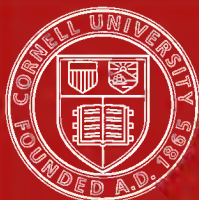
FROM
THE MUTUAL LIFE
INSURANCE COMPANY
OF NEW YORK

RICHARD A. McCURDY, PRESIDENT



New York
State College of Agriculture
At Cornell University
Ithaca, N. Y.

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ACCIDENTS EMERGENCIES AND ILLNESSES

A MANUAL FOR REFERENCE

ISSUED BY

The Mutual Life Insurance Company
OF NEW YORK

RICHARD A. McCURDY, President

1902

PUBLISHED BY THE COMPANY

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PREFACE.



This book has been prepared and published in the hope that it will be of service in alleviating suffering and saving life by the timely application of the advice and instruction contained in its pages. In some respects it is a revised edition of two pamphlets formerly published by THE MUTUAL LIFE INSURANCE COMPANY OF NEW YORK, entitled "Plain Directions for Accidents, Emergencies and Poisons" and "Plain Directions for the Care of the Sick." These little volumes were printed originally in 1875, and several large editions have since been gratuitously distributed. It has been deemed advisable to re-write them and embody in the new production such additional changes in the matter as the advance in medical science during the past twenty-five years rendered necessary in order to make the teachings of the book conform to present practices. The book has been written and revised by competent physicians for gratuitous distribution and is intended to indicate what should be done in cases of ordinary accidents and illnesses prior to the coming of the skilled assistance to be furnished by the trained nurse and the medical adviser. If what is hereinafter written shall in any way tend to prevent unnecessary suffering or contribute to save the life and activity of some member of the community, the company will feel amply rewarded for the trouble and expense involved in the preparation and publication of this book.

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SECTION I.

ACCIDENTS.

A policy in THE MUTUAL LIFE INSURANCE COMPANY OF NEW YORK may not prevent an accident, but it will materially aid in recovery.

INTRODUCTION.



Scarcely a month passes by that we do not meet somewhere an accident or an emergency in which a little reliable information would be of the greatest service. One of the difficulties usually to be contended with in such cases is a lack of knowledge on the part of the bystanders as to what should be done. It will be found, as a rule, that the simplest and usually the most useful things are neglected, while there is a disposition to rely upon cumbrous appliances, which are often disadvantageous, and sometimes positively hurtful.

The object of this pamphlet is to present in a compressed form, for easy recollection and ready reference, a few suggestions as to what should be done in certain cases of emergency before the arrival of skilled professional assistance. It is, perhaps, not too much to say that what can be done to give relief or save life must in many cases be done by some one before the aid of a physician can be procured. It has been truly said, "for want of timely care, millions have died of medicable wounds."

As far as possible, the use of technical terms will be omitted, although where necessary they will be used, with a brief definition inclosed in brackets; but the writer would respectfully suggest that, whenever possible, the scientific terms be remembered and used, instead of the popular expressions for the same thing. A scientific term, the world over, means but one thing; while a popular expression, in one place, means one thing, and in another, two or three things; and possibly, nothing at all.

A wise precaution against accidents of all kinds
is a life policy in THE MUTUAL LIFE INSURANCE
COMPANY OF NEW YORK.

ACCIDENTS IN GENERAL.

An accident usually assembles a crowd around the victim. The first thing to be done is to get the people away from the injured person. A space of at least ten feet on every side should be kept wholly free from everybody except the one or two who are in charge of the operations for relief. If others are needed to assist in some special duty, as lifting, removing of dress, etc., they can be specially selected from the crowd for the moment and then dismissed. The kindest thing a bystander can do is to insist upon a free space around the injured person, and to select from the crowd those who will hold themselves in readiness to start for whatever the physician or the individual in charge of the case may require. To show how little real interest the inside layer of the crowd takes in the restoration of the patient, it will often be almost impossible to get one of them to run an errand in the interest of the sufferer.

Crowds and
accidents.

If the person has been thrown from a carriage, injured by a fall from a height, blow or other cause, while there may be no fracture or other *external* injury evident, the nervous system has received what is called a "shock." As is commonly said, the person is "faint."

A person suffering with such symptoms should be placed flat on the back, with the head, neck

General
treatment of
an injured
person.

and shoulders slightly raised. The limbs, at the same time, should be straightened out, if practicable; so that the heart, which is already depressed in action, may act at as little disadvantage as possible. The cravat, collar and everything else calculated to impede the circulation toward the head or the movements of the chest should be loosened or removed. If the injury is slight, reaction will soon take place after giving the person a sip of cold water, brandy (a teaspoonful in a tablespoonful of cold water), or aromatic spirits of ammonia (twenty drops in a tablespoonful of cold water) repeated in a few minutes. Gentle frictions to the extremities; a few drops of cologne-water on a handkerchief to the nostrils; if the weather is hot, the use of a palm-leaf fan; hot flannels to the limbs and epigastrium, (pit of the stomach), are all likewise useful in assisting reaction.

Removing
an injured
person.

By this time, should a surgeon have arrived, he will examine and decide upon the special nature of the injury, and inaugurate measures of special relief. Should he have not appeared, and it is thought best to remove the patient to the hospital or his home, a stretcher should be procured, or a substitute in the shape of a settee or shutter. The injured person should be gently slipped on it, the body being supported as much as possible along its length, and the face covered so as to prevent, as much as practicable, the uncomfortable feeling of being stared at by passers-by. Four persons of uniform gait should then gently lift the stretcher and slowly carry the person to his destination. In most cities, appliances for carrying injured persons are kept at the station-houses, and can be obtained on

application, as well as the services of a good policeman. The authority of the latter is almost invaluable in keeping away the crowd while conveying the person through the streets. If the person is to be taken to the hospital, a dispatch from a police-station will secure, free of charge, an ambulance with competent attendants to take charge of the injured individual.

Directions for fracture and dislocations are given elsewhere, pp. 32-33.

SHOCK.

Mild forms of shock, or collapse, as it is sometimes called, are often, by the non-professional, confounded with fainting (syncope), and an ordinary attack of fainting is analogous to shock. The symptoms between the two vary rather in degree and duration than in kind. Shock.

Life may be destroyed by certain agencies, as a blow upon the "pit of the stomach," or a sudden and powerful emotion of the mind, and no visible trace be left in any part of the body. This is called "death from shock" and is the extreme result of shock.

Usually the patient lies in a state of utter prostration. There is pallor of the whole surface; the lips are bloodless and pale. The eyes lose their luster, and the eyeball is usually partially covered by the drooping upper lid. The nostrils are usually dilated. The skin is covered with a cold, clammy moisture, often gathered in beads of sweat upon the forehead. The temperature is low, and perhaps the person shivers. The weakness of the muscles is most marked; as the phrase is, "the patient is prostrated." The mind is bewildered, often insensible, unless aroused; and in Symptoms.

many cases, nausea and vomiting are present. In extreme cases, the nausea and vomiting are not so apt to occur.

Sudden and severe injuries, particularly if extensive cause shock. Burns—especially of children—extending over a large surface, even if not to a great depth, are often followed by shock, and this complication requires the earliest attention.

Causes. Certain poisons, as tobacco and tartar emetic, act in this manner, depressing the system. So does a current of electricity, as is seen in the effects of lightning.

Loss of blood produces or aggravates shock. Hence a slight injury, with much loss of blood, may be attended with more shock than a comparatively more severe injury without the loss of blood. Debility favors the influence of shock. A weak system is more easily impressed by it, and, as should be expected, reaction from its effects is longer in taking place.

Influence of age. As the vital powers of life decline, from engrafted or natural causes, there is less power available as a reserve to meet contingencies. In youth there is an available fund of this kind; in the adult the resources of the system may be equal to the task of ordinary maintenance, but in the aged, as said before, there is much less ability to deal with sudden losses of strength. The aged, therefore, are slow to rally from the effects of shock. They have more power of resistance than the young. The shock does not readily make an impression, as it does in the young, but when it does, the impression endures. In the young the impression is more easily made, but sooner subsides.

Treatment.—This consists in first placing the patient as flat on his back as possible, with the head raised not over an inch. This is an important point in cases of ordinary fainting, and whenever the vital powers are depressed. Stimulants are required. The aromatic character of brandy enables it to be retained by the stomach when whisky and other forms of alcohol are rejected. A teaspoonful on cracked ice every minute, until six or eight have been taken, is the best way to give it. If the temperature of the body is raised by it, and there seems a revival of the action of the heart, enough brandy has been given. Twenty drops of the aromatic spirits of ammonia in a teaspoonful of water may be given every couple of minutes, until four or five doses have been taken. Applications of heat to the extremities and “pit of the stomach” are very useful. Flannels wrung out in hot water, or bottles of hot water properly wrapped up, should not be neglected. Mustard-plasters are often used, but they are so inferior to heat for the purpose, if that can be applied, and so apt to blister, thereby making it impossible to use anything else on the surface, that some reluctance is felt in advising them.

Treatment
of shock.

Nausea and vomiting are often present in shock, and can best be allayed by getting the patient to swallow small chips of ice whole. Ice can be easily chipped by standing the piece with the grain upright, and splitting off a thin edge with the point of a pin.

Ammonia (smelling salts), applied to the nostrils, is often useful; and cologne, on a handkerchief, is frequently pungent enough to be of service in the same way.

FAINTING.

Treatment
of fainting.

The head of the party who has fainted should be kept lower than the rest of the body. Should the person be sitting in a chair at the moment, stand behind the chair, reach the hands over in front, so as to grasp the sides of the chair, take a step backward, and then slowly depress the back, the head being supported until the floor is reached. An assistant by holding the knees will prevent lateral slipping off from the seat of the chair. It is so rapidly and easily done, besides so effective in its operation, that little else remains to be done. Usually the back of the head of the patient scarcely reaches the floor before consciousness returns.

ASPHYXIA.

Meaning of
asphyxia.

This commonly used word signifies an absence of pulse. It states a condition, but not the cause, and indicates suspended animation, produced by the non-conversion of the venous blood in the lungs into arterial. The supply of good air to the lungs being cut off by some cause, the necessary purification at that point no longer takes place, and death of the entire body ensues from the absence of arterial blood, or the presence of venous blood; some physiologists regard it as due to the one cause, and some to the other. In other words, the person dies because the blood is not purified.

There are several varieties of asphyxia: (1) Asphyxia from submersion, as in the ordinary drowning in water or other fluids; (2) asphyxia from mechanical causes, as by strangulation, or hanging, and by for-

eign bodies in the windpipe or its approaches; (3) asphyxia by inhalation of gases, known as suffocation; (4) asphyxia from torpor of the medulla oblongata (an important portion of the brain, at the junction of the spinal cord and what is called the brain), produced by the introduction into the blood of certain poisons.

Varieties of asphyxia.

DROWNING.

As said above, this is asphyxia from submersion in water or other fluids. This accident is of such frequent occurrence that it is the duty of every member of the community to understand the measures of prompt relief in such cases.

Asphyxia by drowning.

The body should be recovered as soon as possible from the water. Then turn the face and head downward for a moment and, while so doing, thrust a finger far backward into the mouth and depress the tongue forward. This favors the escape of a small quantity of water or mucus, or other substances, often collected at the base of the tongue, which tends to obstruct the entrance of air to the lungs. The barbarous practice of rolling the person over a barrel, or hanging him head downward, to permit the escape of water from the lungs, has almost ceased, in view of the fact, now generally known, that no water gets into the lungs.

Treatment.

Clear the mouth and throat.

If it is possible to get blankets or some other dry coverings, the body should be rapidly stripped of its clothing and placed in them. The extremities should be rubbed with the dry hands, and heated flannels applied to the rest of the body, which should lie almost flat. If these things can be done in a house nearby,

Make hot applications.

so much the better ; but no time should be lost in transporting the body.

Condition of
the blood in
asphyxia.

The following is the condition of affairs: Each atom of the body requires arterial blood, which is blood purified in the lungs by exposure to the air breathed. The purification has been suspended, and to that extent the life of the body is suspended. Movements of the chest, by which air is inhaled, are at a standstill, and cannot, of themselves, be resumed. If *artificial breathing* can be carried out for some time, it will be seen that these impurities may be so far removed that *natural* respiration can take place. Two methods are usually employed for the purpose—the first and best known being “Sylvester’s Ready Method.”

Sylvester’s
Method of
artificial
respiration.

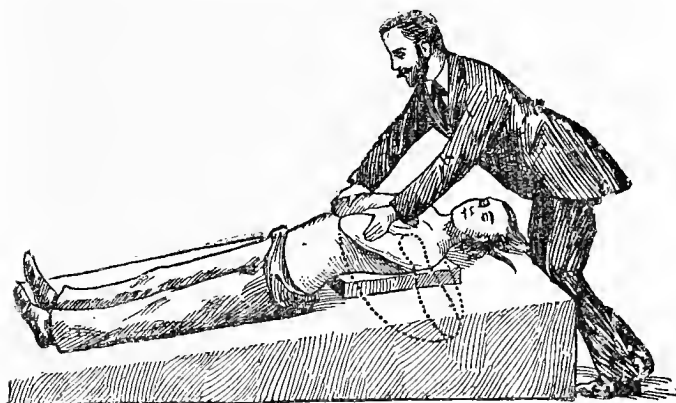
This consists, after the above suggestions have been carried out, in pulling the tongue forward in order to favor the passage of air along the base of the tongue into the trachea (windpipe), and then in drawing the arms away from the sides of the body and upward, so as to meet over the head, by means of which the ribs are raised (expansion of the chest), by the pectoral muscles running from them to the arms near the shoulder. A vacuum is thus created in the lungs, the air rushes in, and the blood is then purified by the passage of the impure gases in the blood-vessels to the air, and by the giving up by the air of a portion of its oxygen to the blood. The arms are now brought down to the sides, and the elbows made to almost meet over what is called the “pit of the stomach.” This produces contraction of the walls of the chest, and expulsion of the impure air from the lungs.

Sylvester’s
Method of
artificial
respiration.

These two movements constitute an act of respiration, and should be persisted in, without interruption,

at the rate of about sixteen to the minute. In other words, each complete movement should occupy about four seconds, which is about the natural rate of respiration in health.

Frequency of
respiratory
acts.



It is sometimes quite difficult to keep the tongue from slipping backward, and when it does so, it tends to prevent the air from rushing into the windpipe. It is a good plan to draw it forward by holding its tip with a handkerchief or dry cloth. If it is too slippery it may be necessary to pass a hatpin or a hairpin or a needle with a coarse thread right through the tongue. The tongue should be gently drawn forward with each inspiratory act and allowed to slip back gently with each expiratory act.

Keep the
tongue for-
ward.

The second "Ready Method," as it is called, is that of Marshall Hall:

The person whose breathing is to be restored is placed flat on the face, gentle pressure is then made on the back, the pressure removed, the body turned

Marshall
Hall's
Method of
artificial
respiration.

on its side, or a little beyond that. The body is then turned again on the face, where gentle pressure is again used to the back, then turned on the side. This should be done about sixteen times in a minute.

Advantage
of previous
practice.

Both of these methods have the same object in view ; either may be exclusively used, or one may be alternated with the other. Most physicians express a preference for the first described ("Ready Method of Sylvester.") Both of these procedures should be practiced, in advance, by the reader, because such practice is more easily remembered than a concise rule. There are few people in an ordinary life, who will not find it useful to have knowledge of this kind at their fingers' end.

Cramps
when swim-
ming.

In speaking of the restoration of persons drowned, it is often said that they were good swimmers and must have been attacked with "cramps." This is a spasmodic contraction of the muscles beyond the control of the individual, and occurs after exhaustion of the muscles from over-exertion. Persons suffering from debility should never be induced to go beyond their depth in the water, or out of reach of immediate assistance. There is no warning in advance of the seizure, and the person sinks at once. Many lives are lost each season, in shallow as well as in deep water, from these seizures, which could have been avoided had the bather, perhaps just recovering from an attack of sickness, or even indisposition, not neglected the precautions mentioned.

After-
treatment of
drowning.

Recovery from asphyxia by drowning can scarcely be expected to take place after an immersion of five or six minutes, although there are well-authenticated cases where restoration has taken place after an immersion of as much as twenty minutes. The

effort ought to be made, and persisted in until the arrival of a physician, or for at least a couple of hours. As soon as returning vitality permits, some brandy in a little water may be given; and, as the strength of the person is usually completely exhausted by muscular efforts of the most violent and continued character to save himself from drowning, some beef-tea or other easily digested nourishment should be given. He should be kept in bed, very quiet and comfortably warm for some hours at least.

HANGING.

Here death results from asphyxia induced by pressure applied to the trachea (windpipe) from the outside, as in strangling, or hanging. The body, if hanging, should be at once cut down, care being taken not to let it fall. Remove by the finger, as in the directions in drowning, any accumulation of mucus at the base of the tongue, and place the body on the back, just as directed for a person taken from the water. If the body is still warm, after removal of the clothing, the face, head, neck and chest should be dashed freely with cold water. To do this successfully, a person should stand six feet or more away with a bowl of cold water, and then throw its contents with as much force as possible against the person. This having been repeated a number of times, the water should be rapidly wiped off with a towel. There is little essential difference in the condition of a person who has been hanged and one who has been drowned. In both it is asphyxia; in one case, the air has been kept from the lungs by a ligature; in the other by a liquid. Artificial respiration in both of them

Asphyxia
from
hanging.

Treatment.

must be used, assisted for the same reason and in the same manner by like auxiliaries.

There is an impression, quite prevalent among the ignorant, that a penalty is incurred at law for cutting down the body of a person found hanging, unless the sanction of the coroner is obtained. Such delay is unnecessary and unjustifiable; and an effort should at once be made to restore suspended animation by the methods given.

SUFFOCATION.

Asphyxia
from
suffocation,

There are several gases which, when inhaled, are followed by symptoms of asphyxia. The little valve (epiglottis) over the entrance of the trachea (wind-pipe) is so extremely sensitive that it will not even permit a drop of water to pass without a spasmodic closure of the opening, followed by coughing. It is not only sensitive to solids and liquids, but also to the presence of most gases. At one time it was thought that all gases were taken past it into the lungs, and thence absorbed into the blood. The prevailing opinion now is that most of them irritate the valve at the entrance of the trachea, and closure of the entrance follows. The breathing is thus interrupted much as it is in drowning, where the liquid cuts off the passage of air to the lungs; or as in hanging, where the ligature prevents the entrance of air. In such cases death results from asphyxia.

CARBONIC-ACID GAS.

Carbonic-
acid gas.

Asphyxia by this gas takes place as soon as the person inhales it. A sudden sense of suffocation is felt, with dizziness and inability to stand. If the individual

is standing at the time the air is taken into the lungs, and falls, he is in a position while down to inhale still more of the carbonic-acid gas, for it is heavier than the air.

This gas, sometimes known under the name of "choke damp," is produced in the ordinary process of fermentation, in burning and slacking lime; it is also found in mines, particularly coal mines, and in wells, cellars or caves which have long been closed. It is considerably heavier than the atmosphere, and is consequently found lying on the floor of the cavity where confined.

Where
found.

No well, vat, old cellar, or cavern of any kind, should ever be entered without first lowering a lighted candle into the deepest point. If the flame is extinguished, or burns dimly, this indicates the presence of this gas, and no one, under any circumstances, should be permitted to enter until this foul air has been removed. It lies at the bottom, because it is too heavy to ascend. It is not so heavy, however, but that a strong current of common air will dislodge it. Buckets of water dashed down into the well, or masses of lighted shavings or blazing paper, give enough movement to the carbonic-acid gas to dislodge it from its resting place. Freshly slacked lime also rapidly absorbs it. After testing the success of the efforts by again introducing the lighted candle, it can soon be known whether a person may enter with impunity.

How de-
tected and
dislodged.

Sometimes there may be no carbonic-acid gas in the cavity, but the efforts of the workmen will dislodge it from an adjacent space into the one in which they are breathing. This possibility should never be lost sight of.

How to remove a person overcome by carbonic-acid gas.

When a person appears overcome by this carbonic-acid gas, he is, of course, wholly unable to help himself, and must at once be removed. Sometimes a grapnel-hook can be used with advantage, but often the better way is to rapidly lower some bold, clear-headed person, with a rope securely fastened around his middle, who can seize and bring to the surface the unfortunate individual. No time should be lost in descending or arising, as the person lowered depends upon doing everything during the interval that he can hold his breath; for, of course, should *he* inhale the gas, his position, in this respect, would be but little better than the man he attempts to succor. A large sack is sometimes thrown over the head and shoulders of the person who descends. It contains enough air to serve for several inhalations, while the texture of the material prevents the admission of the deleterious gas in a hurtful degree.

The person suffering from asphyxia, immediately after being brought out from the gas, should be placed on his back, the neck and throat bared, and any other obstacles to breathing quickly removed. His body should then be quickly stripped, and if he has not fallen into water on being overpowered by the gas, his head, neck and shoulders should be freely dashed with cold water.

Treatment.

Remember, this is not "sprinkling," as commonly practiced, but, as said before, a person should stand off some distance, with a bowl of cold water, and *throw* its contents, with as much force as possible, against the parts. Other bowlfulls should follow without an interval for half a minute, while one can count thirty slowly, then the dripping water be wiped away by a towel. This procedure should be repeated from

time to time, as required. Sometimes, if a brook of water is near, the stripped person might be repeatedly dipped into it, care being taken, of course, not to dip his face. Artificial respiration should be used as soon as possible.

If the person has fallen into water and become *chilled*, the use of the cold water, in this manner, should be avoided, as the evaporation of the moisture absorbs more heat than can be manufactured by the exhausted and overpowered system. In such a case, the body of the person should be put into a warmed bed, with hot applications, and artificial respiration (p. 16) at once established, as in the asphyxia from drowning and hanging.

While artificial respiration is being used, friction applied to the limbs should be kept up.

BURNING CHARCOAL.

Carbonic-oxide, a very poisonous gas, is given off during the burning of charcoal, and when inhaled for a sufficient length of time, rapidly proves fatal. The person quickly drops insensible, and dies of asphyxia, very similarly to one who succumbs to carbonic-acid gas. The treatment there advised under the previous heading should at once be carried out.

Asphyxia
from car-
bonic-oxide
gas.

ANTHRACITE AND BITUMINOUS COAL.

These also, when burned in a close room, as a kitchen shut up for the night with an open stove of burning coals, give off, to a degree, the peculiar poisonous gas alluded to as coming from burning charcoal, carbonic-oxide gas, as well as other noxious gases. Persons sleeping in such a room, unless awakened as the air becomes fouled, will soon be found

Asphyxia
from burn-
ing coal.

senseless or dead. The treatment should be as described in the preceding pages, under asphyxia from inhaling carbonic-acid gas.

COMMON BURNING GAS.

**Asphyxia
from
ordinary
gas.**

Persons retiring at night often leave the gas "turned down," and the flame becomes extinguished. Enough gas may then escape to give trouble to the sleeper unless the room is well ventilated. Persons have been known to "blow it out" as they would a candle, and suffocation more or less complete has followed.

Treat as in the asphyxia from carbonic-acid gas just described.

FOUL AIR IN DRAINS AND PRIVIES.

**Asphyxia
from foul air
in drains
and privies.**

This usually consists of sulphuretted hydrogen, and arises from the decomposition of the residual matters found in these situations. Great caution, on this account, should always be observed on opening and entering such places, or places in possible communication with them, especially if they have been long closed. A small quantity of pure sulphuretted hydrogen, if inhaled, is usually fatal; but, in the cases referred to, the gas usually exists diluted with common air. The breathing becomes difficult, the person loses his strength, falls, becomes insensible and cold, lips and face are blue, and the mouth is covered with bloody mucus.

The person should be removed as quickly as possible beyond the influence of the foul air, and the treatment under the head of "Carbonic-Acid Gas" pursued.

The possibility of such a disaster should always be borne in mind in opening long-closed drains or

privy-vaults, and the danger lessened by taking a few pounds of chloride of lime (bleaching powder), dissolving it in a pailful of water, and dashing it into the cavity. In the absence of this, lime and water in the form of the common "whitewash" may be employed. This gas readily combines with lime, to that extent freeing the air of the poisonous compound.

FOREIGN BODIES IN THE THROAT.

A piece of food or some other body often gets back into the mouth, and cannot be swallowed. In such a case, the finger will often be able to thrust it downward, should that be thought best. A hairpin, straightened and bent at the extremity, will often drag it out. If the body is firm in character, a pair of scissors, separated at the rivet, and one blade held by the point, will furnish a loop, which often can be made to extract it.

Foreign
body in the
throat.

ACCIDENTS FROM LIGHTNING.

A person struck by lightning is usually rendered more or less unconscious, the unconsciousness lasting for a longer or shorter time. Cases are on record where a person struck exhibited no sign of life for an hour, and then recovered. Temporary paralysis of a portion of the body may remain for a while, or a disturbance of some special function, such as the sight, smell, taste, or hearing. When death takes place, it is from shock to the brain and nervous system.

Struck by
lightning.

When the person exhibits little or no signs of life, the clothing should be rapidly removed and the body exposed to a dashing of cold water; then dried, placed in bed, and warmth applied, particularly to the

Treatment.

"pit of the stomach," by means of glass or rubber bottles filled with hot water.

Artificial respiration should be kept up until the parts of the brain and nervous system in charge of this duty shall have recovered enough to attend to it. As said before, recoveries after an hour of supposed death are on record.

Some stimulant, as brandy (teaspoonful) or the aromatic spirits of ammonia (twenty drops in a table-spoonful of water), repeated in a few minutes, may be given.

Burns caused by lightning should receive the same attention as a burn from any other cause. Sometimes an injury observed is not directly due to the electricity, but to a fragment detached by that agent from a neighboring substance.

BURNS AND SCALDS.

Put the fire
out.

When the clothing catches fire, throw the person down on the ground, so that the flames will not rise toward the mouth and nostrils. Then without a moment's delay, roll the person on the carpet, or, if possible, in a hearth-rug, so as to stifle the flames. If no rug can be had, use your coat. *Keep the flame as much as possible from the face, so as to prevent the entrance of the hot air into the lungs.* This can be done by beginning at the neck and shoulders with the wrapping.

If the burn or scald involves considerable surface, symptoms of shock from the extreme of mere weakness to that of utter prostration appear. This at once requires prompt attention, and a few drops of aromatic spirits of ammonia in water, or a little brandy, should

be given and repeated in a few moments until a return of the strength is apparent. A burn, superficial as far as depth is concerned, but covering a large surface, especially in the case of small children and aged people, is usually considered more serious than a burn smaller in extent, but deeper and more complete. If there is reason to suppose that hot air or steam has been inhaled, no time should be lost in obtaining the opinion of a physician as to the result of the injury to the throat and lungs.

Shock from
burns.

Treatment.—The burnt surface should be cleansed carefully by allowing water to trickle over it. The skin over a blister should not be cut off, but should be snipped with scissors near the edge, and the water gently squeezed out. This allows the skin to remain as a protective. If the blister re-forms it may be necessary to repeat this operation.

Treatment.

If the burn or scald is slight in character, one of the best applications is the cold water dressing, p. 32, keeping the linens used constantly wet.

In more severe cases a very good application is carron oil, which is a mixture of linseed oil and lime-water in equal parts. Sweet-oil alone is very good. Vaseline, with a little boric acid rubbed up with it, is also very soothing. Lard and baking soda mixed will relieve pain.

Wheaten flour is often dusted over the burn; but this, with the discharges, hardens, and is of as little comfort as an application of small crusts of bread would be to the injured part. Cotton wool (carded cotton, cotton batting) is often used, but the fibers become imbedded in the discharges, and then cannot be detached without pain and disturbance of the wound.

Flour or
cotton-wool
not to be
used.

Talcum powder, or Fuller's Earth, is very useful as

drying powders after the blister has been cut, or any of the skin becomes detached.

Very simple
measures.

If the burn or scald, particularly the latter, is superficial in character, a simple and useful dressing is the application by brush or a soft wisp of old muslin, of the white of egg to the injury. As soon as the first layer dries, another should be used. A lather of soap from the shaving-cup, applied by the brush in the same way, is often followed by immediate relief. These substances protect from the action of the air the irritated nerves beneath.

If a physician has been sent for, it is better not to make any domestic applications to the burned parts. Such things frequently prevent him from using those better adapted, and keep him from forming a correct estimate of the real extent of the injuries.

If shock or
pain is
present.

If there is much shock and depression, stimulants will be needed, such as aromatic spirits of ammonia, brandy or whisky. If there is much pain, laudanum can be given, five drops every two or three hours, until four or five doses have been administered.

Scalds.

Burns and scalds practically differ but little from each other. Scalds are usually more confined to the outer cuticle, unless the substance containing the heat is viscid in character, as oil, pitch, etc., and does not rapidly run off the part with which it came in contact. As far as popular assistance is concerned, the two may be regarded as presenting no essential difference.

Burns by
lime, caustic
potash and
other
alkalies.

BURNS BY LIME, CAUSTIC POTASH, AND OTHER ALKALIES.

As a rule, these are troublesome, since there is not only removal of the cuticle (superficial skin), but destruction of the soft parts below. Lime is a powerful alkali, and rapidly destroys the parts with which it

comes in contact. As it is useless to attempt to pick it off, an application should at once be made of something to unite with the alkali, so as to form a comparatively harmless preparation. Vinegar diluted with water, lemon juice or any other dilute acid will answer. These things do not undo what has been done; they only prevent further mischief. The subsequent treatment is the same as for burns. And what has been said about the alkali known as lime, may be said about other alkalies, potash, soda, ammonia, etc.

BURNS BY ACIDS—SULPHURIC ACID (OIL OF VITRIOL),
NITRIC ACID (AQUA FORTIS), ETC.

As alkalies destroy the living tissue they come in contact with, so will acids of sufficient concentration. In such cases, applications of water will dilute them beyond their capacity to injure. Alkalies neutralize acids into harmless preparations, and cooking soda, washing-soda or saleratus can be used for this purpose. Common earth, gathered almost anywhere, applied in handfuls, contains alkali enough of one kind or another to entitle it to the consideration of being one of the best (and at the same time most easily secured) applications in cases of burns by acids.

Burns by
acids.

CONTUSIONS.

These common injuries are termed "bruises" by most people, and are the only injuries, besides wounds and fractures, produced by blows or pressure. The injury may be of the *simple* form; only a slight shaking or jarring of the texture, with no visible change, except what results from the rupture of the

Contusions
or bruises.

blood-vessels. This is the most frequent. In the more *severe* but less frequent form, the contusion means broken blood-vessels, muscles, and tissues between and around them; the parts are thoroughly crushed, sometimes to a pulp, damaged beyond recovery, and ready to perish in the gangrene resulting from the extreme form of such an injury.

In contusions, the first conspicuous symptom is that of shock, which generally, but not always, bears a relation to the extent of the injury. Thus a crushed finger is attended, as a rule, with much less shock than a crushed hand or foot. Contusion of certain parts, as the larger joints, breasts, and other portions of the body, are followed by most severe symptoms of shock. The pain is not always as severe as might at first be thought, for the nerves are so much injured as to be deprived of their ability to receive and transmit the necessary impression.

Symptoms.

The quantity of blood escaping from the ruptured vessels depends, in a large degree, upon the size and number of the vessels injured, but in some degree upon the space in which the blood can accumulate. A single divided vessel in the scalp, owing to the looseness of the tissue in which the vessels are distributed, may permit a swelling, the result of the escape of blood, extending in area over a half of one side of the head.

Discoloration is due to the color of the escaped blood, seen through the cuticle, and varies from blackness usually indicating intense injury, through dark blue, purple, crimson, down to delicate pink, indicating only a blood-stained fluid.

Treatment.

Treatment.—In the milder contusions, there is but little shock. Should there be more, place the patient

on the back, head not elevated, and give stimulants as directed. (See shock, p. 13). The next thing is to limit the consequences likely to ensue from the ruptured blood vessel. This is best done by lessening the supply of blood to the part by elevating this, if possible, above the heart, and applying cold in the shape of powdered ice, tied up in towels, to the part, and along the course of the larger vessels going to the injury.

A large piece of ice secured in a towel, so that the pieces cannot escape, can be reduced to fine fragments by a blow or two against the wall. After it has been on for a time, water may be substituted in the shape of a drip;* or several thicknesses of wet towel, may be applied, only they must be dipped in cold water, squeezed out, and changed every minute or two. If not changed, the wet towels really act as poultices to the part, inviting what we should try to prevent. When the surgeon appears, special measures will be directed by him. Recollect it takes a great deal of heat to convert ice into water, and water into vapor, and if the patient has not got this heat, symptoms of chilliness will be observed. When this happens the application must be stopped, and the moisture must be taken up by a towel; particular attention always being paid to keep the bed-clothing and everything else perfectly dry and neat.

A common accident is a "mashed finger" from the member getting caught in a closing window, or want

* A pitcher, or some other vessel of water, placed higher than the injured parts, with a moistened string or strip of linen. One end of the string is placed in the water, while the other hangs down on the outside, so that the water will drip along the string from the vessel to the point of contusion.

Mashed finger and its treatment.

of precision in using a hammer. The firm bone beneath and the blow above usually contuse (bruise) the tissues (veins, vessels, muscles, etc.), between, and often the pain and other symptoms last some days.

Wrap up in a bandage of old muslin, and keep constantly wet with cold water, or some mild astringent like Pond's Extract. If there is much pain add laudanum. The discoloration and swelling may remain some days after the pain subsides. Stimulating liniments can now be used to encourage an extra flow of pure blood to the part and the washing away of the injured blood.

FRACTURES.

Fractures, varieties of.

These may be divided for our purposes into two varieties—the simple and the compound. In a simple fracture the bone is broken and there is some laceration of the soft parts around it, but no break in the skin. In a compound fracture the skin over the seat of the fracture is also broken, and sometimes the bone protrudes.

There is always some shock, and great pain in the broken bone, especially if it is stirred. If surgical assistance can be obtained without removing the patient, he should be left lying quietly. All that need be done is to cut the clothing over the affected part and put on it cloths wet with cold water, which will allay the pain to some degree. If he has to be removed, it will be necessary to make some kind of a splint which will hold the limb immovable. The best thing for this is two pieces of board, each long enough to extend beyond the joints above and below the broken bone and a little wider than the thickness

of the limb. These boards should be well padded with cotton batting, or several layers of cloth, or wool, or hay, or anything that will be soft enough to take off the direct pressure of the boards. They should then be placed on each side of the limb and firmly bound to it by tying handkerchiefs or strips of cloth around them. If boards cannot be obtained, anything stiff may be used, as canes or umbrellas. A very good splint for the leg is a pillow, which is placed under the leg and then bound firmly around it. The patient can now be placed very gently on a stretcher, made of a shutter or a bench, and carried very carefully home. Of course it will be necessary to consult surgical advice in order to have the bone properly set.

Treatment.

If the fracture is compound, the break in the skin should be treated like any other wound and some antiseptic directly applied. (See p. 42 et seq.) Otherwise the treatment is the same as for a simple fracture. Simple fractures may be converted into compound fractures by careless handling. Therefore never lift an injured person until you have satisfied yourself as to the presence or absence of a fracture.

DISLOCATIONS.

These occur when one bone is displaced from another at a joint. Little can be done to reduce them except by surgical aid. If it is necessary to move the patient before this can be had, it should be done very gently, and the parts kept as immovable as possible. If the dislocation should be compound, as rarely happens, the open wound should be treated antiseptically. (See p. 42 et seq.) A joint which has been dislocated is

Dislocations

much weaker than before, and can be easily dislocated again.

SPRAINS.

These are due to the stretching and tearing of the ligaments around a joint, and are accompanied by great pain and swelling.

Sprains.

Hot-water applications are the best to relieve the pain and reduce the swelling. The joint should be kept absolutely at rest. The best way to secure this is to strap the joint for some distance above and below with adhesive plaster, layer upon layer. Any weak spot which develops in the dressing can be easily reinforced by an extra layer or two. Care should be taken that the strapping is not so tight as to interfere with the circulation of the blood. This can be determined by noting if the part below the strapping remains warm. If it becomes cold and remains so, the strapping is probably too tight, and should be promptly removed.

After all, sprains are very unsatisfactory to treat. Not infrequently they take a longer time to heal than a fracture, and the joint is usually left weakened.

WOUNDS.

Wounds;
varieties of.

For systematic study, wounds may be classified according to their direction, or depth, or locality; but for our purpose they may be arranged after the mode of their infliction. (1) Incised wounds, as cuts or incisions, including the wounds where portions of the body are clearly cut off; (2) punctured wounds, as stabs, pricks, or punctures; (3) contused wounds, which are those combined with bruising or crushing of the divided portions; (4) lacerated wounds, where

the separation of tissue is effected by or combined with tearing of them; (5) poisoned wounds, including all wounds into which any poison, venom or virus is inserted.

Any of these wounds may be attended with excessive hemorrhage or pain or the presence of dead or foreign matter. As all wounds tend to present several common features, a few words will be said about these before describing the distinctive characteristics of each.

The first is *hemorrhage* (bleeding). This depends, as to quantity, upon several conditions, the chief of which is the size of the blood-vessels divided; and, to a degree, upon the manner in which it has been done. A vessel divided with a sharp instrument presents a more favorable outlet for the escape of blood than one that has been divided with a blunt or serrated instrument, or one that has been torn across. Except in the first named, the minute fringes or roughness necessarily left around the edges of the vessel at the point of division retard the escape of blood and furnish points upon which deposits of blood, in the shape of clots, can take place. Hence, all other things being equal, an incised wound is usually attended with more hemorrhage than contused or lacerated wounds.

Hemorrhage
from
wounds.

The bleeding may be simply an oozing from the smallest blood-vessels, called the capillaries. This form of bleeding is not of much consequence, and can easily be checked.

Capillary
hemorrhage.

It may be from a vein, and is then called venous. The veins are larger vessels, which are carrying the blood back to the heart. The blood from them is purple and flows evenly without any force.

Hemorrhage
from veins.

Hemorrhage
from
arteries.

The bleeding may be from an artery, and is then called arterial. The arteries are large distributing vessels which carry the blood from the heart to the extremities. The blood from them is bright red and flows in pulsations or jets, with some force. This is the most dangerous form of bleeding and the hardest to control.

While we are not able sometimes to tell the kind of hemorrhage from a given wound, we should always try to determine it, for there may be considerable difference in the treatment.

Other
symptoms
of wounds.

There is always some pain present in a wound, and this varies largely with the location and extent of the injury. Often it is not near as much as we expect to find.

In wounds of large size there is some shock, and when the wound is very extensive and crushing, the state of shock may be profound, even up to unconsciousness. In some people the mere sight of blood may be enough to cause fainting. This, of course, is very different from shock and much easier to treat.

TREATMENT.

Treatment.

There are several indications to meet in the treatment of a wound, and it can best be described under the following heads:

First—To stop bleeding.

Second—To clean the wound.

Third—To dress the wound.

Fourth—To relieve the other symptoms.

First.—Nature stops bleeding by causing the blood to coagulate into little clots, which plug up the open mouths of the divided blood-vessels and prevent any more blood from flowing out. The smaller the blood-

vessel and the more sluggish the current of blood in it, the quicker this is done. Therefore, this coagulation occurs quickest in the capillaries, next in the veins, and last of all in the arteries. All that we can do is to aid nature in this by making the current of blood flow slower or by making the mouths of the vessels smaller.

How to
stop the
hemorrhage

If the wound is small and the bleeding mostly capillary oozing, the part should be elevated, and firm pressure applied directly to the wound, preferably through a clean wet cloth. A few minutes of this will usually be enough. If it does not, we can try again, or we can apply water just as hot as can be borne without scalding, or we can apply pressure with a piece of ice wrapped up in a clean handkerchief or thin cloth. Heat and cold contract the blood-vessels, and pressure not only does this, but slows the current of blood.

from
capillaries,

If the bleeding is from a small vein, the above measure will usually be enough. If the vein is larger, the pressure may have to be applied for some time. To do this, roll up a handkerchief or clean cloth into a small hard wad, wet it thoroughly and then bind it firmly over the wound by means of another handkerchief or a strip of cloth. It may have to be kept on for some hours before the clots in the vessels are strong enough. The pressure should be sufficient to check the bleeding entirely.

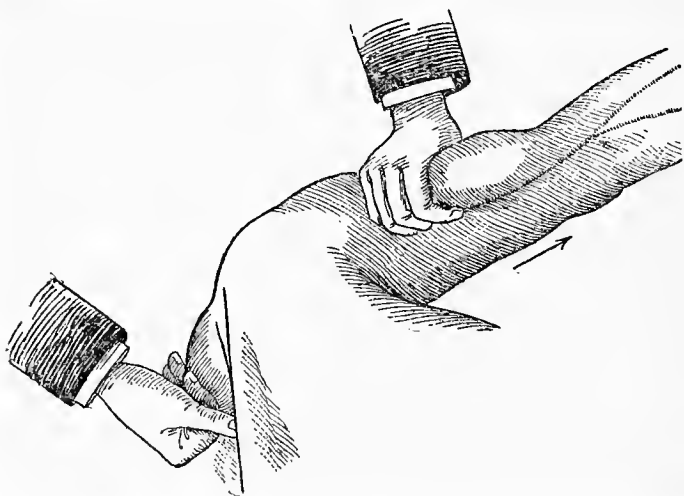
from veins,

If the bleeding is from a small artery, the above measures will often be enough, but if the artery is of any size, they alone will not do. As arterial bleeding is very fast, whatever we do must be done quickly. We must bear in mind that besides applying pressure and heat or cold directly to the wound, what we wish to do is to slow the current of blood in the artery so

from arteries

Course of the
main artery
of the upper
extremity.

that firm clotting can take place. Now the blood is flowing in the artery from the heart to the wound. Therefore, if we can compress the artery above the wound, we diminish or stop altogether the flow of blood toward the wound. We will first consider the case of a wound in the upper extremity. The large artery which supplies the arm passes out of the chest over the first rib and under the collar-bone. It then reaches the side of the arm just behind and below the front fold of the arm-pit. It now passes down the side of the arm, gradually turning to the front, until, at the elbow, it is right in the middle. Its course is shown in the accompanying cut.

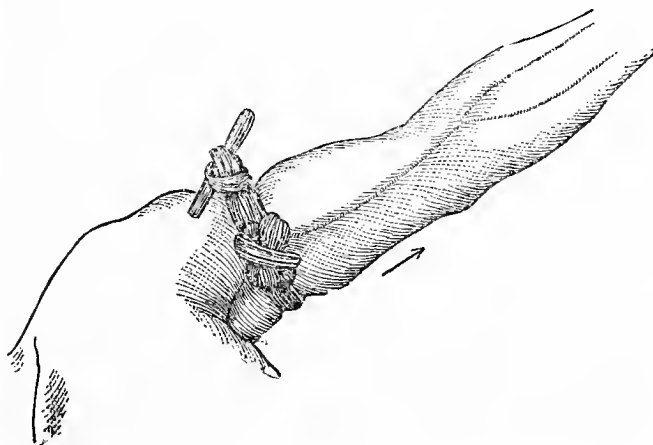


NOTE—The arm and forearm, with dotted lines, indicate the course of the arteries, and points at which pressure can be most judiciously applied.

The arrow points the course of the current of the blood of the artery, from the heart to the extremities.

The part under the collar-bone is called the sub-clavian artery, that in the arm-pit the axillary, and that along the side of the arm the brachial. Pressure can best be applied along the brachial, the pulsations of which can be felt. It should be outward and slightly backward against the bone, and can easily be done by means of the fingers or thumbs firmly applied. While one person is doing this, another can tie in a handkerchief a small round stone or a piece of wood or a watch, or anything that is hard. If nothing like that can be found, tie several firm hard knots into one mass in the middle of the handkerchief. Lay the stone or knot over the artery right by the fingers that are compressing it. Then tie the ends of the handkerchief around the arm in a loose knot, through which is slipped a stick. By twisting this around and around we tighten the handkerchief until the blood

Treatment
of arterial
hemorrhage
from the
upper
extremity.

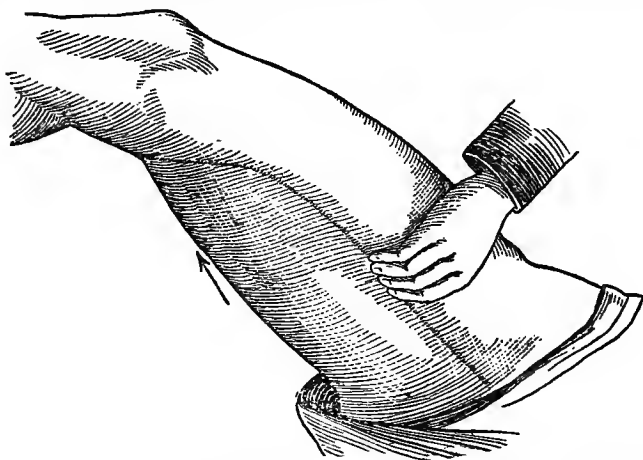


entirely stops flowing, but no tighter. This constitutes a "Spanish windlass" and is very effective. Its application is well shown in the preceding cut (p. 39).

If the wound is in the forearm, we apply this just above the elbow. If the wound is high up in the arm, it may be necessary to compress the subclavian. This is done by thrusting the fingers or the handle of a large key firmly down behind the collar-bone and pressing the artery firmly against the first rib. It is difficult and painful to maintain pressure here for any great length of time.

Course of the
main artery
of the lower
extremity.

In the lower extremity the artery reaches the thigh just where it joins the abdomen, and it can easily be felt pulsating about the middle of the groin. It then passes down the inner surface of the thigh, gradually turning backward until it can be felt at the back of the

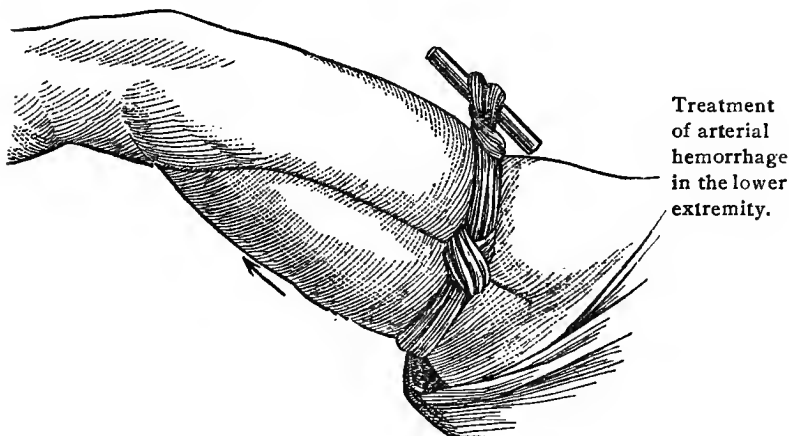


NOTE—The thigh and groin, with dotted lines, suggest the course of the large arteries, and point at which pressure can be most successfully used.

The arrow indicates the direction of the current of the blood of the artery, from the heart to the extremities.

knee in the middle between the cords. In the thigh it is called the femoral artery, back of the knee the popliteal. Its course is shown in the preceding diagram (p. 40).

Pressure can be used as indicated, and the application of the Spanish windlass is well shown in this cut:



If the wound is below the knee, we can usually control the hemorrhage by applying pressure to the popliteal artery, although as this is rather deeply situated, we may find it necessary to apply it to the femoral as shown in the above cut.

If an artery in the scalp is cut, firm pressure over and around the wound will always control it.

It is well to remember in a great emergency that nearly any bleeding can be checked for a time by Direct thrusting the fingers into the wound and pressing Direct pressure. directly upon the bleeding point.

Second.—After the bleeding has entirely stopped, the next step is the cleansing of the wound. First

Cleaning of
the wound.

we ought to make sure that our hands and our clothes are thoroughly clean. We should scrub our hands with soap and hot water and a nail-brush. It is advisable, if possible, to boil the cloths we use and the water we need for washing the wound. The surface around the wound should be thoroughly washed with soap and water. The wound itself should be very gently washed, and any clots lying on its surface carefully wiped or washed away. Then all the soap should be washed away with plenty of water. After this we should apply liberally to the surface of the wound, and all around it, one of the following solutions: Carbolic acid, 1-30; or corrosive sublimate, 1-2000; or boric acid, 5-100. (See pages 164-165.)

Ways in
which
wounds
heal.

Third.—The next step is dressing the wound. This varies considerably, according to the nature of the wound. Wounds heal usually in one of two ways, by first intention or by granulation. Healing by first intention occurs when the wound is clean and the edges can be brought together and kept so. There is very little reparative material needed, the time of healing is short, and the scar left is thin and inconspicuous. Healing by granulation occurs when the edges of the wound cannot be brought together. The reparative material is poured out abundantly on the surface of the wound in the form of little granulations. These gradually increase and grow until they bridge over the gap in the tissues made by the wound. This takes a longer time, and the scar left is much larger. As the scar keeps contracting for a considerable time after the healing is completed, it sometimes causes serious deformities. When a wound becomes inflamed, it is due to the presence of certain germs which multiply in the wound and irri-

tate it. These cause suppuration, the formation of "matter" or pus, which prevents healing by first intention. These germs are very common, and can only be kept out of a wound by thorough cleanliness and the use generally of some antiseptic which destroys them.

If it is a small incised wound, the edges can be brought together by gentle pressure, and three or four layers of flexible collodion (see page 165) applied, for some distance around and over the wound, each layer being allowed to dry before the next is put on. If we have not this, we can cover it with adhesive plaster. If it is a large incised wound, we have to use adhesive plaster, putting the strips across the line of the wound and taking care that the edges of the wound are brought close together. The accompanying cut shows this very well, although the strips of plaster may have to be placed closer :

Dressing of
an incised
wound.



We then dust liberally over the entire length of the wound some dry antiseptic powder, such as iodoform, bismuth subnitrate, or the bismuth and boric acid mixture (see page 164). Over this we place two or three wide layers of lint, or absorbent cotton, or clean cloths which have been well boiled and dried. The whole is kept in place by a few turns of a bandage or strips of cloth or plaster. We are thus careful in the dressing in order to prevent suppuration. If the wound does not show signs of inflammation, such as pain, heat and throbbing, we can leave this dressing on for a week or more, and when we take it off we expect to find the wound healed. When a wound becomes inflamed, we recognize the condition by these signs. In such a case we remove the dressing and see in what part the suppuration is taking place. We then take off the strips of plaster over that part. This permits the pus to escape if it has not already done so. We then wash out the cavity gently, but thoroughly, with one of the antiseptic solutions and dust into it one of the dry antiseptic powders. This dressing will have to be repeated every two or three days. It is of advantage to give a free purgative, such as Epsom or Glauber's salts, when a wound becomes inflamed.

Treatment
of an
inflamed
incised
wound.

If a wound is lacerated or the edges are badly contused, we do not expect to get healing by first intention. We do not try to bring the edges together, for it would be useless. Hence we omit the plaster in dressing such a wound, but in all other respects it should be treated like an incised wound. Inflammation is much more common in this class of wounds, but oftentimes can be avoided by care. Even if it does not occur, we usually have to change the dressings

Dressing of
a lacerated
or contused
wound.

every three or four days, for the discharges from the wound are very apt to soak through in that time.

Fourth.—If the wound is incised, there is little shock, as a rule; but when the wound is very large or much lacerated or contused, shock is apt to be quite marked. It should be treated as described on p. 13.

If there is much loss of blood, fainting is apt to occur. It should be treated as described on pp. 13-14; but care should be taken not to over-stimulate, for then we may start the bleeding afresh. As fainting in itself causes a slowing of the blood-current, it is of some assistance in stopping hemorrhage.

If there is much pain we will have to give some anodyne. Laudanum is the best, in doses of five drops every two or three hours.

BITES.

Independent of the consideration whether any poison has been introduced, a bite may be regarded as a lacerated as well as a contused wound. There is usually a good deal of sloughing of the bitten parts, Bites. and no small amount of pain, owing to the nature of the wound. Care should be taken to remove from the wound any particles of clothing, should any have been forced into it; then wash out with tepid water and castile soap. Usually the part is so much contused that no effort is made to secure adhesion of the opposite sides of the wound; but it should be treated as any other lacerated, contused wound.

BITES OF DOGS.

Rabid dogs are much less frequent, perhaps, than is generally thought; and a rabid dog might bite many

Rabies, or
hydro-
phobia.

human beings without necessarily communicating hydrophobia. It is stated that of dogs bitten by others known to be hydrophobic, scarcely more than one in four become affected; and it is likewise said that among human beings, when no precautions are taken, not more than one in ten or fifteen are affected after being bitten. The celebrated surgeon, John Hunter, knew of twenty-one people who were bitten by the same dog, and only one of the number had the hydrophobia. Besides, many persons have undoubtedly died, after having been bitten, with convulsions, not of hydrophobia, but the result of anxiety and fright. One well-known physician, after having been bitten, as a precautionary measure blew out his brains.

Treatment of
the wound.

Treatment.—Remove the clothing, if any, from the bitten part, and apply a temporary ligature above the wound. This interrupts the activity of the circulation of the part, and to that extent delays absorption of the poisonous saliva by the severed blood-vessels of the wound. While other things are being hurriedly prepared for, some one whose lips and mouth are free from breaks might attempt suction of the wound. The material extracted by the act, apparently chiefly of blood, should of course at once be ejected from the mouth of the person giving the assistance. The bite is really a lacerated and contused wound, and lying in the little roughnesses, and between the shreds, is this poisonous saliva. If by any means these projections and depressions affording the lodgment can be removed, the poison must go with them. If done with a knife, the wound would be converted practically into an incised wound, and would require treatment as such. If a surgeon is about, he would probably

stand a probe upright in the wound, and with a sharp knife cut the entire injured portion out. Professional aid is not always at command, and in such a case it would be well to take a poker or other suitable piece of iron, heat it red hot, at least, in the fire, wipe off and destroy the entire surface of the wound. As fast as destroyed, the tissue becomes white. An iron at white heat gives less pain than one "black hot," as smiths say; for in the latter instance the heat is scarcely sufficient to destroy, but only irritates; while in the former, the greater heat at once destroys the vitality of the part with which it comes in contact. With a properly heated iron, not only the surface is destroyed, but the destructive influence extends beyond and into the healthy tissue, far enough, if no point is neglected, to assure the purposes for which it is used.

Further
treatment
of the
wound.

Some are inclined to think that if the wound is at once well wiped out, and a stick of solid nitrate of silver (lunar caustic) rapidly applied to the entire surface of the wound, little danger is to be apprehended. It acts, but in a milder degree, like the heat of the iron upon the tissues. In case the heat or the caustic has been used, poultices and warm fomentations should be applied to the injury to hasten the sloughing of the part whose vitality has thus been intentionally destroyed.

There is a strange belief among the ignorant, particularly among the people from Ireland, that, whether the dog was "mad" or not at the time of giving the bite, if it should become so at any future time, the disease will appear in whatever individual the animal has bitten. A dog, after having bitten a person, is apt, under this mistaken belief, to be at once slain.

Dog should
be kept alive
if possible.

This should not be done, but the suspected animal placed in confinement and watched, under proper safeguards, for the appearance of the disease. Should no satisfactory appearances indicate the disease in the dog, it can be seen in a moment what unnecessary mental distress can be saved the person bitten and his friends.

Symptoms of
rabies in the
dog.

Mr. Youatt, whose description of canine madness is generally quoted and accepted, says: "The disease manifests itself under two forms—the furious form, characterized by augmented activity of the sensorial and locomotive systems, a disposition to bite and a continual peculiar bark. The animal becomes altered in habits and disposition, has an inclination to lick or carry inedible substances, is restless and snaps in the air; but is still obedient and attached. Soon there is loss of appetite, and thirst; the mouth and tongue swollen; the eyes red, dull and half-closed; the skin of the forehead wrinkled; the coat rough and staring; the gait unsteady and staggering; there is a periodic disposition to bite; the animal in approaching is often quiet and friendly, and then snaps; latterly there is paralysis of the extremities; the breathing and deglutition become affected by spasms; the external surface irritable, and the sensorial functions increased in activity and perverted; convulsions may occur. These symptoms are paroxysmal; they remit and intermit, and are often excited by sight, hearing or touch.

"The sullen form is characterized by shyness and depression, in which there is no disposition to bite, and no fear of fluids. The dog appears to be unusually quiet, is melancholy and has depression of spirits; although he has no fear of water, he does not drink. (The fear of water, it should be said, is acquired by

experience, the effort of swallowing being attended with spasm of the muscles of the throat, afterward often extending to the rest of the muscles of the body.)

"He makes no attempt to bite, and seems haggard and suspicious, avoiding society, and refusing food. The breathing is labored, and the bark is harsh, rough and altered in tone; the mouth is open from the dropping of the jaw; the tongue protrudes and the saliva is constantly flowing. The breathing soon becomes more difficult and laborious; there are tremors, and vomiting, and convulsions."

SECTION II.

EMERGENCIES.

As a preparation for emergencies, there can be nothing better than a policy in THE MUTUAL LIFE INSURANCE COMPANY OF NEW YORK.

EARACHE.

Evaporate the alcohol from a teaspoonful of laudanum (page 57); add half as many drops as you started with of glycerine or sweet-oil; make it milk-warm, and pour into the ear, catching hold of the tip and pulling upward toward the crown of the head (page 59); or, wet a scrap of linen in a teaspoonful of laudanum, dry before a fire, cut into bits, place in the bowl of a tobacco-pipe, light it, cover with a coarse handkerchief, insert end of the stem (mouthpiece), suitably protected so as not to hurt, into the ear of the child. Then apply the lips to the bowl and blow the smoke from the burning opium of the laudanum into the ear. Tobacco alone can be used in the same way. Either of these methods will afford instant relief in most cases. Frequent syringing with decidedly warm, almost hot water, is also highly recommended by eminent aurists. Tenderness, redness, or swelling of the tissues immediately behind the ear are danger signals, and should be promptly heeded, as they indicate serious mischief in the underlying bony structure. Make cold applications (small compresses kept on ice serve the purpose) and summon a physician. If the pain continues, consult a doctor without delay. It may be the beginning of severe inflammation of the ear, which sometimes proves fatal.

Earache.

Any chronic discharge from the ear should be treated until it is entirely well. It may occasion very little inconvenience, but, on the other hand, it may cause a severe inflammation of the brain, which is usually fatal.

Chronic discharge from the ear.

TOOTHACHE.

Toothache.

This is sometimes neuralgic, and sometimes due to decay. Heat to the face outside, and a heated half of a fig held inside, often relieve the former kind, and sometimes afford temporary relief in the latter kind. If the cavity can be cleansed out with a broom-splint and filled with cotton steeped in some of the evaporated laudanum much comfort will be found from it.

FACEACHE.

Faceache.

This usually is neuralgic, and heat applied is always grateful. A small hop-pillow heated and held to the face is useful; or the face may be bathed with laudanum, tincture of arnica or any soothing substance. Mustard-plasters should not be used, as they leave a conspicuous mark, and may blister. Ordinary Cayenne pepper mixed into stiff paste with an equal bulk of Indian-meal and honey, is quite as active and useful, and does not blister the skin.

CROUP.

Varieties.

Croup may be either membranous or spasmodic. The former is really a variety of diphtheria, and should be treated as such. The latter is by far the more common, however, and is often produced by the presence of undigested or indigestible food.

Symptoms.

Some young children seem peculiarly prone to this trouble. The well-known hoarseness of the voice, the rough, brazen cough coming on toward night, always suggests the possibility of an attack of croup. These symptoms, showing increased difficulty of breathing, rapidly grow worse, and all that is to be done must be done quickly. Of course, a physician should be sent for.

The first thing is to get the child to vomit, by giving it every few minutes a teaspoonful of syrup of ipecac, followed by draughts of warm water. As soon as vomiting commences, a warm bath should be given, the skin well dried with a soft warm towel, and the child returned to bed. A properly made and carefully applied warm poultice, or flannels wrung out of hot water, may be placed against the upper and front part of the chest, care being taken after removing it to substitute a warm, dry flannel. In doing these things, do not expose the skin to the slightest draught. A mustard paste, one part mustard to 15 or 20 parts of flour, is also useful, especially so if there is any accompanying bronchial inflammation. Small doses of paragoric or sweet spirits of nitre, 10 drops of either in water repeated every two hours may be given if the cough is troublesome.

Treatment.

After the child vomits, or should it seem weak, five drops of the aromatic spirits of ammonia in a teaspoonful of water may be given every ten minutes until four or five doses shall have been taken. This is for a child of about two years of age.

The stomach of a child susceptible to croup cannot be too carefully guarded, especially if it is suffering from what is popularly known as a "cold."

CONVULSIONS IN CHILDREN.

These, sometimes called "fits," often result from undigested food in the stomach or bowels. The first thing to be done is to put the child in a bath of warm water.

Convulsions
in children.

In the course of a few minutes—which seems much longer to the mother and friends—the spasm relaxes enough to permit an emetic to be given to dislodge

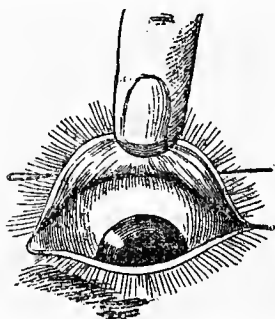
whatever may be in the stomach. The syrup of ipecac, as directed under "Croup," is as good as anything else for the purpose.

Sometimes these convulsions are one of the early symptoms of scarlet fever, measles, or other diseases peculiar to childhood.

FOREIGN BODIES IN THE EYE.

Methods of
removal.

Particles of cinder, dust, or fragments of metal, often get into the eye, and cause a good deal of trouble. Generally they are dislodged and washed out by the extra secretion of tears due to the irritation, but sometimes it is necessary to resort to some process of extraction. A popular and often successful plan is to take hold of the lashes of the upper lid and separate it from the eyeball, so that the lashes of the lower lid will slip up in the space, acting as a brush to the inner surface of the upper eyelid. This cannot, as a rule, remove anything from the eyeball. A better way is to hold a knitting needle or a match over the upper lid, close to and just under the edge of the orbit, firmly, but without much pressure. Then seize the lashes of that lid by the fingers of the disengaged



hand, and gently turn the lid upward and backward over the needle, or the substitute used. Movement of the eyeball by the sufferer, in a strong light, usually reveals the presence of the intruding body, so that by means of a corner of a silk or cambric handkerchief, it can be detached and removed.

Should the foreign body be imbedded in the mucous membrane covering the eyeball or the eyelid (conjunctiva), a steady hand and a rigid instrument will usually lift it out. A very useful spud for such a purpose is the butt of a clean pen. A drop or two of cocaine solution, 5 or 10 per cent., will deaden the sensibility of the eye, and materially facilitate the removal of the foreign body. It dilates the pupil, but this effect passes off in a few hours.

Removal, if
imbedded.

The foreign body often cannot be seen, but the person assures us that he feels it. Usually he does not really feel the presence of the body, so much as the roughness (really a wound) left by it. In such a case, or even if the body has been seen and removed, a soothing application to the injury is as useful as the same thing applied to a wound of the hand. Take a spoon or cup, heat it, and pour in a few drops of laudanum. It will soon become dense and jelly-like. A few drops of water added will dissolve this gummy material, and the liquid thus formed may be applied by the finger to the "inside of the eye," as they say. Laudanum is opium dissolved in alcohol. The alcohol is somewhat irritating, but is easily evaporated by the gentle heat, leaving an extract of opium, which is dissolved in the water afterward added. A still better application for this sense of irritation is made by dissolving a teaspoonful of boric acid, either powdered or crystalline, in a teacupful of warm water. A few

Treatment of
the after-irri-
tation.

Pink-eye, or
conjuncti-
vitis.

drops of this can be dropped in the eye every half hour or so. This is also an excellent thing for that condition of the eye known as pink-eye, or acute conjunctivitis. If the inflammation is at all marked, it is well to combine cold applications with the drops by keeping cloths wet with ice-water constantly on the eye. It should be remembered that pink-eye can easily be transferred to the sound eye, or to another person, and precautions should be taken to prevent this. In no case use any of the popular "eye-waters" or "salves."

Lime in the
eye.

A not uncommon accident is the lodgment of a fragment of lime in the eye. The delicacy of the organ, and the activity of this powerful alkali, require all that is to be done to be done at once. Do not waste time by attempting to pick it out, but neutralize the alkali by a few drops of vinegar (which is dilute acetic acid) in a little water. A few drops of lemon juice, in a little water, will answer just as well. Even when this is done rapidly, the ulceration caused by the alkali will be some days in disappearing. In all cases where lime has entered the eye, no time should be lost in going to a surgeon.

FOREIGN BODIES IN NOSTRILS AND EAR.

The curious disposition of children to insert foreign bodies, as grains of coffee, corn, peas, pebbles, etc., up the nostrils, and into the ear, is too well known to need more than a mere allusion. If the body is soft, it absorbs moisture from adjacent parts, becomes swollen, and more difficult to remove. If the body is hard, the irritation and inflammation soon set up by it in contiguous parts materially increase the difficulties of removal. Hence the sooner these sub-

stances are removed, the more easily will it be accomplished.

If the foreign body is up the nostril, the child should be made to take a full inspiration ("a full breath"); then if the other nostril be closed with the finger, and the mouth with the hand, the air of the lungs, escaping through the nostril closed by the foreign body, assisted by a sharp blow from the palm of the hand to the back, will often expel the substance.

Treatment of
foreign
bodies in the
nostril.

If it will not escape in this way, and it is near the opening of the nostril, compression by the fingers, just above, will prevent it getting further up, and it can be hooked out with the bent end of a wire or bodkin. Should these measures not remove the foreign body, the child must at once be taken to a surgeon.

Foreign bodies in the ear are more troublesome to deal with. No effort to remove them with a probe, or anything of the kind, should be made by any one except a professional man, for fear of permanent injury to the ear. The head of the child, face downward, should be firmly held between the knees, and with a Mattson's or Davidson syringe a stream of tepid water should be injected into the ear. The nozzle of the syringe should not be introduced into the cavity, as its presence may prevent the dropping out of the desired body after the water has been forced past and beyond it.

Treatment of
foreign
bodies in the
ear.

Should this means not succeed, consult a surgeon without delay.

Insects sometimes get into the ear. The best way of getting them out is to hold the head of the person with the disabled ear upward, and fill the cavity with sweet-oil or glycerine. This drowns the animal, by

Insects in the
ear.

closing up its breathing pores, and in a short time it floats to the surface of the fluid used. The tube of the ear is slightly curved, and when straightened somewhat by catching hold of the upper tip, and gently pulling it upward toward the crown of the head, the liquid flows in more readily.

BLEEDING FROM THE NOSE.

Bleeding
from the
nose.

Bleeding from the nose is sometimes troublesome, but not often fatal. In severe and prolonged cases professional assistance can usually be had, and if not, the remedies and appliances to be used, cannot be properly described here. The most important thing is not to disturb the clot, closing the little ruptured vessels, by blowing the nose. The person should be kept flat on his back, the collar loosened and cold applied to the back of the neck. Do not forget that a small amount of blood will stain quite deeply a large amount of water. One common practice should be carefully avoided—that of holding the head over a vessel and letting the blood drip into it from the end of the nose. This attitude simply congests the head and prolongs the bleeding.

SPITTING OF BLOOD.

Spitting of
blood.

If the blood comes from the lungs, it is suggestive of trouble there, but not always so in young people, especially in young women. The amount of blood lost is in itself rarely fatal. As salt is always given in such cases, it has acquired a good deal of popular confidence for arresting the loss of blood. It and fragments of ice may be given, and the person made to lie quietly on the back. Of course, a doctor should be sent for at once.

POISON-VINE ERUPTION.

Several varieties of the *Rhus*, popularly known as the swamp-sumach or poison-sumach, poison-vine, and poison-oak, when brought in contact with the skin of many persons, produce itching, redness, a sense of burning, tumefaction, and even blistering. Sometimes the swelling is so great as to disguise the features. Some persons coming within the influence of merely the emanations from different species of the *Rhus* experience the same symptoms. The poisonous effects are usually observed shortly after exposure, and begin to decline within a week. Poison-vine eruption.

Weak alkaline solutions—say a teaspoonful of common baking soda to a quart of water, or even lime-water—kept to the part by dipping pieces of linen in them, are useful in allaying the inflammation. The addition of laudanum relieves the pain. Weakened lead-water is also recommended. Cream from milk is perhaps as useful as anything else.

SUNSTROKE.

Ordinary exhaustion, from overwork in a heated atmosphere, is about the only disorder likely to be confounded with sunstroke. The distinction between the two will not be attempted here, as there is no essential difference in the treatment. Sunstroke.

Contrary to what is generally supposed, exposure of the head to the direct rays of the sun is not essential for sunstroke, as statistics show that it may occur in the shade, under shelter, and even at night; sometimes, even in persons who have not been exposed to the sun for days before. Intense heat, either solar or artificial, is necessary to produce it. Workmen in sugar re- Causes.

fineries and laundries, engine and boiler rooms, are not infrequently subject to it.

Sunstroke appears to be decidedly favored by intemperance and want of acclimatization, and the debility which has been brought on by fatigue in a heated atmosphere also favors it. Occupants of badly-ventilated sleeping apartments appear to be oftener attacked than those who sleep in purer air.

Warning
symptoms.

Symptoms.—It is generally thought by the non-professional that the symptoms of sunstroke come on without any warning whatever. Most cases, however, are preceded by pain in the head, wandering of the thoughts, or an inability to think, disturbed vision, irritability of temper, sense of pain or weight at the pit of the stomach, inability to breathe with the usual ease and satisfaction. These symptoms become more marked until insensibility is reached, sometimes preceded by delirium.

Symptoms of
the attack.

The skin is very hot, usually dry, but when not dry, covered with profuse perspiration. The face is dusky, or, as the saying is, "blue"; breathing rapid and short, or slow and sighing. The action of the heart, indicated to the hand placed over it, is weak, rapid and tremulous, often compared to the "fluttering of a bird." In many instances, from what is popularly termed the commencement of the attack until it ends in death, the patient does not move a limb, nor even an eyelid.

The breathing gradually fails; the blood therefore is not purified in the lungs, as is indicated by the livid, purplish appearance of the surface. We are led by it to conclude that death takes place by asphyxia, as described under the heads "Drowning," "Suffocation," etc., pages 15-20.

While we know that certain things favor the disorder, that a high temperature is necessary to produce it, and advise certain measures of precaution and relief, found by experience useful in such cases, but little is really known of the nature of the malady. It would seem that the great heat of the body induces some change in the character of the blood, disqualifying it for the usual purposes of blood. From this peculiar condition of the blood, the portions of the brain or nervous system controlling the action of the muscles of the chest and heart lose their ability to superintend properly the movements of breathing and circulation, and, as said before, the person dies from asphyxia.

Treatment.—The person attacked should be carried at once to some shady spot. If a house in the neighborhood has a bath-tub large enough to hold the entire body, he should be taken there. The tub should be filled with cool water. If it cannot be obtained cool enough, ice should be added. The entire body should then be immersed, with the exception of the head, over which an ice-cap should be placed. This can be made very easily by putting a large fragment of ice in a towel and striking it a few times against the wall, thereby breaking it into small pieces. The patient should be kept in the bath for ten or fifteen minutes and then placed in a bed between blankets without being dried. If, at the end of fifteen minutes more, he shows no signs, or very feeble ones, of returning consciousness, he should be replaced in the bath and treated as before. This can be repeated at intervals of fifteen minutes, until consciousness is quite well established and the body remains cool. After being quite comfortable for some time, it occasion-

Treatment,
if a bath-tub
is available.

ally happens that the person becomes stupid and his body gets hot again. If this occurs, repeat the bath, as before.

Treatment,
if a bath-tub
is not
available.

If no bath-tub is available, the person should be placed in some such shady spot, as a large room, the shade of a building, or a tree. His clothing should be stripped off and his body and head thoroughly sponged with ice-water for twenty minutes, using it very liberally. This should be repeated in fifteen minutes, as in the case of the bath. In fact, there is no difference in the two methods, except that by means of a tub we can apply cold water much more thoroughly.

Other
measures of
treatment.

Artificial respiration, until the natural breathing returns, may be resorted to, if necessary, as soon as the heated condition of the body is overcome. The dashing of cold water over the chest and face is a useful means of encouraging a return of the suspended breathing, and is practiced in asphyxia from other causes (page 14). The ready methods of page 13, however, had better be relied on for this purpose.

Medicines, it will be seen, are of little value in this malady. A stimulant, however, may be useful, and the best stimulant in all such cases, if it can be obtained, is the aromatic spirits of ammonia, fifteen or twenty drops in a tablespoonful of water, which may be given every few minutes, until three or four doses have been taken.

Preventive
measures.

Prevention.—During very hot weather all use whatever of malt, fermented, or distilled drinks should be abstained from. Not only do they favor, in a general way, a condition of the system in many respects similar to that which leads to sunstroke, but they deaden sensibility at the very time that it ought

to be on the alert, and the person is less able to detect slight changes in his feelings, which otherwise might have served as useful guides.

Everything in any way calculated to impair the strength should be avoided. Sleep is a most wonderful restorer of strength, and the want of it is often caused by a badly-assorted late meal of the evening before. Defective ventilation leads to a condition of affairs favorable to the malady under consideration. Every night a bath should be taken; but as this is not always possible in every house, the entire body should be washed off each night before lying down. Laboring men who work in the sun have no excuse for neglecting this, for water costs nothing, and three minutes' time is all that is required.

Drinking large quantities of cold water, merely because it is cold, should be avoided immediately before, during and after meals. The debility resulting from the heat weakens the digestive powers, and water unnecessarily used to excess at the times named tends still further to retard the digestion of the food by weakening the solvent action of the secretions of the stomach.

Preventive
measures
(continued).

In other words, if there is a time above all others, the year around, when precaution for the preservation of health is required, it is during the hot months of summer.

Loosely fitting light garments should be worn, if possible. Particular attention should be given the head. It should be protected from the heat of the sun, and at the same time the covering worn should favor the circulation of a free current of air over the scalp. A straw hat of loose texture, with a lining to the crown which can be kept constantly wet, ought to be worn;

and if it has brim enough to protect the neck, and even the shoulders, the wearer is more fortunate than other people.

While attention should always be paid to these things in hot weather, it is particularly necessary, if any symptom be observed on some special day, that the greatest care should be taken not to let it extend into an attack of sunstroke. Discontinuance of work until the symptoms disappear, in such a case, would seem to be the only course to be pursued.

It is said that persons who have once suffered from sunstroke, for a long time after are unable to bear much exposure to the heat without a recurrence of the symptoms of the malady.

FROST BITE.

Exposure to severe cold often leaves the fingers and toes, nose and ears and lips, more or less frozen. This condition, short of absolute death of the part, is termed frost bite. It will be observed that the portions of the body just enumerated are those most exposed, in area, to the influence of the cold, and are furthest situated from the heart; and it will, perhaps, be unnecessary to remark that persons who are debilitated are more apt to suffer with the same amount of exposure than the robust.

When the circulation of any part begins to succumb to the influence of the cold, it becomes puffy, bluish and smarting. This is because the blood moves more slowly than natural through the vessels exposed near the surface. Soon this blueness disappears, and the part becomes pallid, as if the influence of the cold had contracted the vessels to an extent incompatible with the passage of blood through them.

Frost bite,
where
located.

Symptoms.

The pain at this point ceases ; indeed, until the sufferer meets a friend, he often does not know of his mishap. At this stage, the injury has become so great that, unless proper means are taken to restore circulation, there ensues complete death of the part, which in due time sloughs away, and is detached from the living tissue.

What takes place in a part of the body may take place in the whole of it, and then the person becomes "frozen to death." The blood of the extremities being gradually forced from them, under the continued subjection to the cold, is driven inward upon the larger blood-vessels, heart, lungs and brain. There is increasing difficulty in breathing, owing to the engorged state of the chest, and, what should always be remembered by one so exposed to cold, an unconquerable desire to sleep. To sleep then is to die. If the person exhibits such a symptom, he must, by all means, be kept constantly moving.

Symptoms of
general
freezing.

Treatment.—Persons exposed as described, must be treated promptly, and one thing should never be lost sight of, that is, to keep the frozen person away from the heat. A person taken up insensible, or nearly so, from exposure to the cold, should be taken into a cold room and his clothing removed, and be thoroughly rubbed with snow, or with cloths wrung out with ice-water. The friction to every part of the body, particularly the extremities, must be continued for some time, until signs of returning animation appear. When the frozen limbs show signs of life, the person should be carefully dried ; put in a cold bed in a cold room ; artificial respiration used until the natural is established ; then brandy given, also ginger-tea and beef-tea. Usually,

Treatment of
general
freezing.

by this time medical advice will have been secured to direct further treatment. Should this not be the case, do not forget that the patient is to be brought by degrees into rather warmer air; and lest in some part there might still be defective circulation, he should be kept away from exposure to the heat of the fire.

Treatment of
frost bite.

Milder degrees of the same condition, as suspension of life in the ear, nose, finger, or toe, from exposure to cold, must be treated with the same general directions in view. The part should be kept away from the heat, and rubbed with handfuls of snow, or with towels dipped in cold water, until circulation appears re-established. Exposure of the part to the heat before, as we might say, it has been rebuilt, is apt to be followed by sloughing.

CHILBLAIN.

Chilblain,
symptoms.

As the name implies, this occurs when the circulation of the part has become chilled—disturbed—not destroyed. It is generally attended with much itching, tingling and smarting, and is usually found in the toes, outside edge of the feet, just where the toe emerges, or in the heel. Sometimes, in persons of debilitated state of health, the hands suffer. These symptoms are particularly annoying just after lying down in bed.

Treatment.

The most useful thing for these annoying symptoms is to keep away from the fire, and every night, before retiring, bathe the feet in cold water, or rub them with snow. They should then be well dried with a soft towel. After this, the application of the ordinary compound resin ointment of the apothecaries is often of use in stimulating the circulation through the part. The efficiency of this ointment for the special purpose can be increased by asking the apothecary to add to an ounce of it a

couple of drams of the oil of turpentine. It may be remarked, that persons who suffer in winter from cold feet are often benefited to a surprising degree by bathing them at night, before retiring, in cold water. Such persons should always keep their feet away from the fire.

CONVULSIONS.

Convulsions, or "fits," as they are often called, are a frequent cause of alarm in the streets, or at public assemblages. In the decided majority of instances, the convulsions may be safely presumed to be epileptic; so, unless otherwise specified, the remarks here made apply to that form. Ordinary fainting may be confounded with it; but here the face is pale, the person perfectly still, and there is no perceptible breathing. Besides, in fainting there are no convulsive movements.

Usually
epileptic.

Frequently the epileptic seizure is ushered in with a peculiar sharp cry, as the person falls over. This does not always occur, but when it does, there can be no doubt, if it is a convulsion at all, that it is epileptic. There is frothing of the mouth, sometimes tinged with blood from the tongue or a fold of the lips having been caught between the teeth at the moment the spasm commenced in the muscles of the jaws. Sometimes there are general convulsive movements of the whole body; often of parts of it only. At first the face is pale, but usually, in the course of a few moments, it becomes livid, except around the mouth, which often continues pale, in strong contrast with the color of the rest of the face. As a general rule, it may be said that the convulsive feature of attack does not last much longer than four or five minutes, although to bystanders the time naturally seems longer. Then

Symptoms.

the person opens his eyes with a certain degree of intelligence, or revives enough to speak ; and it is usually at this point of the attack that the most must be done. Sometimes there is nothing beyond it, and the individual gets up, hurriedly puts on his hat, and walks off, apparently the least concerned person of all.

If this happy termination does not take place, the brief semi-conscious interval gives way to a heavy stupor, varying in duration from thirty minutes to three or even six hours.

Treatment.—In epileptic convulsions, there is usually nothing to be done. Ignorant people on such occasions are apt, upon the general plea, "If you do not know what to do, do something," to insist upon "opening the hands," as the phrase is, saying that the patient will be better as soon as they can do it. The truth is, they cannot do it until the patient is better. All interference of this kind is hurtful, and no good can come of it. All rude efforts aggravate the trouble, perhaps by exhausting still further the muscular strength of the patient.

All that can be done is to keep the person from injuring himself or hurting others during the violent convulsive movements, by removing him to some clear space, where there is nothing to strike against. Do not attempt to hold the limbs, but loosen everything about the throat and chest. A folded handkerchief or a cork can be slipped between the teeth, so as to prevent biting of the tongue. Care should be taken that it does not interfere with breathing.

Wait a few minutes for the convulsive movements to cease, and the semi-conscious state to appear. As said above, it will soon be seen. Then, if the person is a stranger, get his name and residence, if possible,

with such other knowledge as may be useful. In the meanwhile, keep the crowd away. This is a very important measure of assistance in convulsions, as in every other emergency. By this it is not meant that no one must bend over the victim, but that a perfectly free space of at least ten feet on each side should be kept, with none in it but the one or two persons immediately assisting him.

Thirty drops of the aromatic spirits of ammonia, in a teaspoonful of water, may be given to the patient, as it is thought by many physicians to lighten and shorten the later stage of stupor. The spasmodic condition of the muscles of the jaws, by means of a little gentle dexterity, can usually be sufficiently overcome to permit of the introduction of the restorative into the mouth by the assistance of another spoon or a piece of smooth stick. After getting the liquid into the mouth, press down the base of the tongue, and the mixture will readily run down the throat. As much of it will necessarily be lost during the operation, double the quantity may be prepared for use. If more than the thirty drops should be given, no trouble from it need be feared.

Treatment
after the
convulsion

If the name and residence have been secured, the friends of the person can be notified. If not, he should be taken to some place of security until consciousness returns.

Persons liable to epileptic convulsions should never be permitted to go from the house without a strip containing the name, residence and disease, attached inside of the coat, where it will at once be seen upon unbuttoning the coat over the chest. A reference on it to a memorandum in some pocket containing a suggestion as to the duration of the attack, and to

Epileptics
should
always carry
their name
and address.

some remedy which assists restoration, would often materially add to the comfort and advantage of the afflicted person.

Apoplectic
convulsions.

Other convulsions are apoplectic. These are comparatively uncommon. As a rule, little can be done by bystanders, further than loosening everything about the neck. This should be done in all convulsions.

Hysterical
convulsions.

The convulsions known as hysterical are usually found in young women who are not very strong. Until assistance comes, act as directed in epileptic convulsions. The distinction between them cannot be expressed to unprofessional persons.

DIARRHOEA.

Diarrhœa,
causes.

This very common summer complaint may be due to several causes. It may be caused by simple excess of food, especially fruits and vegetables; or by improper food, such as these same things, when unripe; or by food that has begun to decompose, even though so slightly as not to be detected by the senses; or by changes in the weather, the so-called catching cold, although this latter is more of a predisposing cause than an immediate one; or by changes in the drinking water.

Symptoms.

The symptoms vary much in severity, cases ranging from two or three movements a day to thirty or forty. The movements may be accompanied by prostration, by no pain or by considerable. The cases range from the harmless attacks, which no one pays much attention to, up to the border line of dysentery.

In all cases the condition exists that some unsuitable material is present in the intestines, that the latter are trying to get rid of it, and are already irritated by

it. We have then two indications; First to remove this offensive matter. Second, to allay the irritation caused by it. For the first there is nothing better than castor-oil, a tablespoonful or two of which should be taken at once by an adult. A little less may be given to children, but they stand it very well. If this cannot be had, we can give a few grains of calomel or a few teaspoonfuls of Epsom or Glauber's salts in water; but these are not as good as castor-oil.

Treatment

To allay the irritation present in the intestines, we can apply hot cloths to the abdomen, and these are made more efficient by adding a few drops of turpentine to the hot water in which they are dipped. A large mustard plaster is also good. This should be quite weak—one part mustard to ten parts of flour—and should be made with cold water. These local applications can be made as soon as we have given one of the purgatives above mentioned. In three or four hours more we can give some medicine, which will soothe the intestines. A simple but effective one is blackberry brandy with bismuth subnitrate, a tablespoonful of the former and an even teaspoonful of the latter every two or three hours. If much pain is present, we can add five drops of laudanum to each dose. Care should be taken that the diet is very simple for the next few days, consisting mainly of milk, eggs and toast.

If blackberry brandy cannot be had, any other mild astringent can be used. Even Pond's Extract will be of service. The bismuth will make the movements black, but that should not alarm any one. In very mild cases the castor-oil alone may be enough to cure the trouble. If the movements are at all frequent, it is better for the patient to remain in bed.

DYSENTERY.

Dysentery.

When the movements are quite frequent, containing blood or mucus, and are accompanied and followed by griping pain, the condition known as dysentery is present. This is much more serious than diarrhœa, and every means should be taken to obtain the advice of a physician. If this cannot be had the measures indicated under "Diarrhœa" should be carried out, and will oftentimes succeed. They must be done thoroughly, and if the attack lasts longer than two days, it will be necessary to give the castor-oil every second day. If blackberry brandy is not used, it will be necessary to give some other stimulant—a tablespoonful of brandy or whisky in water or milk every four or five hours.

CHOLERA MORBUS.

Cholera morbus, causes.

This disease is due in most, if not all, cases to the eating of some poisonous food. This may be poisonous naturally, as in the case of some mushrooms, or it may be so from beginning decomposition. Decomposition causes in many foods, even before it can be detected by the senses, the formation of certain active principles called ptomaines, and these are often very irritating to the stomach and intestines.

Symptoms.

The symptoms are frequent retching and vomiting, profuse diarrhœa and marked prostration and weakness. These symptoms last only a few hours, as a rule, but they are sometimes fatal.

A physician is nearly always required, as usually the medicines have to be given hypodermically, owing to the vomiting. Nothing should be given by mouth at

first—not even water or ice. Hot cloths or a mustard plaster may be applied to the abdomen, and the extremities can be rubbed to relieve the cramps which are often present. If no doctor can be had, five drops of laudanum without any water can be placed on the tongue, and repeated every fifteen minutes until five or six doses have been taken. Some will be doubtless vomited, but enough may be absorbed to have some effect. After the vomiting has ceased for two hours, teaspoonful doses of brandy may be given every fifteen or twenty minutes. If any diarrhœa is present the next day, it should be treated. The diet should be very simple for a few days.

Treatment.

EPIDEMIC CHOLERA.

This is a very severe and fatal disease, spreading over the world in epidemics which regularly begin in Asia. From this circumstance it is often called Asiatic cholera. It is caused by certain germs, which are usually taken in with the drinking water, and then develop in the intestines.

Epidemic cholera.

The symptoms are very much like cholera morbus, but much more fatal, one or two out of every three attacked dying.

Little can be done during the attack except by a doctor. If he cannot be obtained, follow out the same treatment as laid down in cholera morbus. During an epidemic of cholera, every diarrhœa, no matter how trifling, should be treated promptly and thoroughly. As a preventive measure during an epidemic, all the drinking water, and the water used in preparing the food and washing the dishes, should be well boiled. None of the ordinary filters are of any use.

Treatment.

TO CHECK VOMITING.

Treatment of
vomiting.

If due to mere irritability of the stomach or nervous system, the aromatic spirits of ammonia, in twenty-drop doses in ice-water, every few minutes, iced mineral-water, iced champagne, thirty-drop doses of brandy, a mustard-plaster, cayenne-pepper plaster, broken ice in a bladder to the stomach, or opposite, over the spine, are all useful. This last often succeeds where other things fail.

Sometimes the vomiting is a proper effort to get something out of the stomach that ought not to be there. If this is known to be the case, assist it with a solution of salt and water, or pulverized ipecacuanha.

MALARIA.

Malaria,
cause of.

This disease is now known to be due to a living germ called the plasmodium malarix. The plasmodium obtains entrance to the blood from the drinking water, or possibly is injected through the skin by mosquitoes. There are several species of this organism, and each gives rise to a distinct type of the disease.

The symptoms of the disease are so well known and usually so easily recognized that we will not describe them.

Varieties.

The most common variety in this country is intermittent fever, also called "chills and fever" and "fever and ague." In this there is a distinct interval between the chills during which the patient feels comparatively well. The chills and fever usually occur every other day, and then we speak of it as the tertian type; or every day, being then called quotidian; or every third

day, then being called quartan. Or the symptoms including the fever may persist without intermission, and then we speak of it as continuous or remittent malarial fever. Or the disease may pass into a chronic state, without chill or fever, which is commonly known as "dumb ague." There is also the very severe form known as pernicious fever. This usually begins as ordinary chills and fever, but after one or two attacks the symptoms get very much worse in the next one, the patient becomes delirious, then stupid and unconscious, and dies in a few hours. Besides these varieties there are other rare forms, too numerous to mention.

The treatment can be summed up in one word—quinine. This is best used in the form of bisulphate, which is more soluble and less irritating than the common sulphate. It is well to precede the administration of this by a dose of calomel, five or ten grains, to relieve the congestion of the liver, which is often present. Then take quinine, ten grains three times a day, until three days after the last chill. The dose can now be reduced to five grains three times daily until the seventh day after the last chill. Malaria has a distinct tendency to reappear on the seventh day, and for this reason it is a good plan to increase the dose on that day to ten grains three times. If this point is safely passed, quinine should still be taken for a week, one dose of five grains daily. In some cases quinine seems to lose its efficacy. In these Warburg's Tincture, which is a mixture of quinine, with aloes and aromatics, is of great service. A tablespoonful should be taken each morning, fasting. In other cases, Clark's Powder will prove of value. This consists of quinine, ten grains; capsicum, three grains, and pow-

Treatment

dered opium, one grain. One dose should be taken about four hours before the expected chill, and small doses of quinine during the intervals. If quinine causes much headache or ringing in the ears, this can be largely overcome by taking bromide of sodium or potassium, grain for grain, with each dose of quinine.

Preventive
measures.

To prevent the development of malaria certain precautions can be taken, which are of value. One should not go out after sunset, nor near freshly plowed land. The home should not be in a hollow and the bedroom should be on the second floor, or higher. A cup of strong coffee before getting up is also of service. The most efficient preventive, however, is a small dose of quinine, say two grains, every morning on arising. This can be kept up for a long time with benefit and without harm.

SECTION III.

POISONS.

The effect of the accidental administration of poison may be greatly mitigated by a policy in THE MUTUAL LIFE INSURANCE COMPANY OF NEW YORK.

POISONS.

Under this term people are inclined to place only those things which, if taken internally, produce death. Physicians, however, consider it merely a relative term, and call anything a poison that does more harm than good to the body. A little of a good thing may be useful, but, beyond the point of usefulness, may be injurious. An exaggerated injury from the same cause may well be termed a poison. There is not a single poison in the entire list, which, in proper quantities, and under favorable circumstances, may not be used with advantage to the human body; and on the other hand there is scarcely a single thing in ordinary use, which if indulged in beyond the requirements of the body or its ability to properly dispose of it, may not be followed by symptoms of derangement of the economy, and in the above qualified sense is not miscalled, if termed a poison.

Definition of
a poison.

In the majority of cases, the poison is introduced into the body through the stomach and as soon as swallowed may commence destructive action upon the mouth, throat, or stomach, as in the cases of acids, alkalies, arsenic, phosphorus, etc. While some substances act in this way, others pass from the stomach through the mucous membrane without injuring it into the blood and are carried by it to the brain and other portions of the nervous system, where the really injurious action begins, overpowering them so that the breathing and action of the heart are not kept up. To this class of poisons belong alcohol, aconite, belladonna, opium, strychnia, etc.

Mode of
action.

A knowledge of the mode of action of a substance will, therefore, of itself suggest an antidote or remedy. If an alkali has been taken, an acid will neutralize it, converting it into a compound less hurtful. The new compound is, perhaps, injurious, but not so active, and can be removed from the stomach somewhat at leisure. On the other hand, if an acid has been taken, an alkali would naturally suggest itself as an antidote.

Treatment
in general.

Some poisonous substances cannot be neutralized by any convenient article, and must be removed from their lodging-place as soon as possible, and their effects counteracted.

If the agent does not act upon the stomach directly, but upon the brain and nervous system, reaching it through the blood, a recollection of what was said when certain gases have been inhaled will meet the case. Artificial respiration would, of course, be resorted to. This should continue until enough of the poison in the blood has been eliminated by the natural processes constantly going on in the body to permit the brain and nervous system to resume one of their old duties, that of attending to the respiration and circulation of the blood.

As few persons have the necessary knowledge of the different poisons, each of these substances will be spoken of somewhat in detail, and alphabetically arranged, so that, in case of need, immediate reference can be made to the particular substance supposed to have been taken.

It should never be forgotten that the substance swallowed as a poison must be considered in its action as divided into two parts: that portion which has already acted upon the mucous membrane (lining) of the

throat and stomach, or which has already passed from the stomach into the blood; and that portion that is in the stomach and yet to be disposed of.

It is the latter portion, perhaps, in most instances, we are called upon to first deal with, and evacuation of the stomach must be effected with the least possible loss of time. This is done with the stomach-pump and by emetics. No directions for poisons are complete without reference to the stomach-pump. With people who know nothing about the matter, it is very popular. The writer knows of but one physician among all his acquaintances who professes to keep one, and unless this particular instrument differs from all other complicated instruments rarely used, he does not believe the owner of it could get it to work in an emergency, if he wished. Not a single apothecary, as far as he knows, keeps one, and a non-professional person could not use a stomach-pump with success if he had a dozen of them at his command. A siphon stomach-tube is of much value for emptying the stomach, but it can only be used successfully by a physician.

EMETICS.

For the purpose of rapidly emptying the stomach in the majority of cases, before the arrival of a physician, and after it as well, nothing equals an emetic. The most easily obtained is usually the best. There are few places where these things cannot be had: Ground mustard, common salt, and warm water.

Take a tablespoonful of ground mustard and mix with a tumbler of water to about the consistence of milk. Give the person one-fourth of it at once. Then follow with a cup of warm water. In about a minute,

give the person the same quantity again, followed by the warm water. If vomiting does not take place, continue giving until it does, letting a minute or so elapse after each dose. Plentiful draughts of tepid water materially assist the action of an emetic, and the free use of it should, therefore, not be omitted. Mustard is not only useful as an emetic, easily obtained, and as readily given as anything else, but it is stimulating in character. This feature gives it a peculiar value in most cases where an emetic is demanded, for a stimulant is often needed at the same time. The amount of stimulation derived from mustard is not always enough, but it is of some assistance in this direction.

Common
salt.

Common salt is even easier to obtain than ground mustard, and is as certain in its action. A teacupful of water, with as much salt dissolved as the water will hold, is given every minute or so, until vomiting occurs.

Warm water.

Warm water, given cup after cup, is a safe emetic; but as the above-mentioned articles are so easily obtained, it is rarely used alone. Usually it is given to assist the action of the other substances, on the principle, perhaps, that a distended stomach is more easily emptied than one with little in it. After vomiting has occurred, frequent draughts of warm water are often given to cleanse out the stomach. In many instances warm milk, gum-arabic water, flour and water, the white of an egg in a teacup of tepid water, and such substances, are given instead, with the expectation that their gummy viscid properties may enable them to entangle and detach particles of the poison adherent to the mucous membrane (lining) of the stomach. In

addition, they are soothing to the irritated condition of the parts.

Tickling the inside of the throat by the finger, or with the tip of a feather, will in many instances suffice to induce vomiting. Frequently, after an emetic has been given, this procedure is used to hasten its action.

Tickling the throat.

Sulphate of zinc is another valuable emetic often found in private houses. As much as will lie heaped up on a twenty-five cent piece is twenty grains, which is a dose, when dissolved in water. This quantity should be given at a single draught, followed by a cup of tepid water, and repeated every three minutes, until three or four doses have been taken, or vomiting occurs. If there is none in the house, send to the nearest apothecary for sixty grains of the sulphate of zinc ("white vitriol"). Empty into half a pint of tepid water. Stir rapidly with a stick, and it will soon dissolve. One-third of this half-pint contains, of course, twenty grains of the sixty put in, and that quantity should be given at a single draught, followed, as all emetics should be, by draughts of tepid water. In a few minutes repeat, as directed about mustard, unless profuse vomiting takes place.

Sulphate of zinc.

Pulverized ipecacuanha is another valuable emetic, particularly for children. It can be obtained of any apothecary. Sixty grains (one dram) of it may be requested. It is a ground root, and does not dissolve in water, but mixes with it, like ground mustard. One-third of the sixty grains, which is twenty grains (as much in bulk as will heap up on a silver quarter) may be given, mixed with a small teacup of tepid water, followed by a draught of tepid water. In a few moments, if vomiting does not occur, give another third,

Ipecac.

as you gave the first, to be followed in sixty seconds more by the last.

Swallowing
should be
forced, if
necessary.

A good deal of trouble is often experienced in getting the person to swallow. This may be due to insensibility, fright or stubbornness. The thumb of each hand may be slipped in outside and close against the teeth, along the line of junction, until the spot is reached behind which there are no teeth. Then through that vacant space slip the tips of the thumbs in between the jaws, when a separation can be readily effected. The thumbs should be kept there, for the patient cannot bite the attendant while his fingers are in such a position, and the handle of a strong iron or silver spoon or piece of smooth stick be thrust back far enough to forcibly depress the tongue. The liquid can then be poured down the throat, if the person is lying on his back. At first it will fill up the space at the base of the tongue, but a little more depression of the tongue by the spoon or stick will cause it to run down the throat. There need be no fear of the fluid getting into the windpipe, for a very sensitive valve over the entrance of the trachea (windpipe) amply protects it.

Vomiting
should be
repeated.

The first vomiting, as said before, does not necessarily clear the stomach of its contents. Much of the poison may remain adherent to the mucous membrane, requiring frequent washings for detachment and removal. After the first vomiting, there is usually little trouble in keeping it up, by simply giving plenty of tepid water. Warm water alone, as said before, is often an emetic, and when none of the substances mentioned can be had, must be wholly relied upon for the purpose.

Before the action of an emetic can begin, a portion of the poison usually escapes from the stomach into the bowels. No vomiting can affect it; so, after the contents of the stomach have been removed by the action of the emetic, it is always well, to administer a quick-acting purgative, such as Epsom salts, two teaspoonfuls in half a glass of water. Follow this in fifteen minutes by good quantities of milk, which, passing down, engages the activity of the poison. Flour and water will answer, but better, perhaps, is the white of eggs mixed with water.

Bowels
should be
purged.

Now we will suppose all the poison has been removed by the above efforts from the stomach. The next thing is the removal of the consequences of that portion of the poison which has already commenced its work. If the mucous membrane has been injured, it should have rest from its usual work—digesting food—and be treated by suitable soothing applications, as barley water, gum-arabic water, and such things. This should follow where the poisoning is due to any of the mineral poisons.

After-treat-
ment.

POISONING BY MUSHROOMS.

Persons not well acquainted with the difference between the poisonous and edible mushrooms had better buy them of those who are, or go without. There are distinctions between them, but they are not of such a character as can be made evident in this work.

Poisoning by
mushrooms.

When poisoning from eating mushrooms does take place, the contents of the stomach should at once be evacuated by an emetic. (See page 83.) After vomiting has commenced, it should be promoted by

draughts of warm water, barley water, but particularly by drinking copiously of warm milk and water, to which sugar has been added.

What has passed along into the bowels should be hurried out as fast as possible, by some cathartic, before further absorption into the blood can take place.

If there is much prostration, some easily procured stimulant might be useful, as the aromatic spirits of ammonia, or brandy. A very excellent antidote is tincture of belladonna, ten drops in a little water every hour until four or five doses have been taken.

POISONOUS MEATS.

Poisonous meats.

The eating of meat from diseased animals is often followed by symptoms of a poisonous character. Animals otherwise in perfect health, but which have been butchered and prepared for food after long and exhaustive confinement, are unfit for eating. Not only is the meat of such animals lacking in nutritive character, when compared with the meat of animals killed from the pasture without excitement, or after being kept until proper recovery from the effects of the journey to market, but it is much less savory, and shows a disposition to decompose much more readily. It has been estimated by competent authorities, that between the two kinds of meat there is, in a commercial sense alone, as far as nutriment is concerned, a difference of nearly 50 per cent. in favor of the meat of healthful animals, butchered after complete recovery from the excitement and fatigue of drive or carriage to market. The additional cost per pound of meat to cover the expenses of extra

care and precaution before butchering, would amount to but a small fraction of the percentage named, leaving the rest of it a true profit to the consumer.

The eating of this overdriven meat is sometimes followed by symptoms of irritation of the stomach and bowels; but they can, in the ordinary sense of the word, scarcely be said to be of a poisonous character, however much the use of them may temporarily derange the health.

POISONOUS FISH.

Several varieties of fish, at all seasons of the year, are reputed to be poisonous. These should, of course, always be let alone. Should they have been eaten by accident, the best treatment is that given under the head of "Poisoning by Mushrooms," page 87.

Poisonous
fish.

Shellfish, at certain seasons of the year, after spawning, are considered poisonous; at least, they are unhealthy. This process of nature is known to be very exhausting, and during it or just afterward, the individual is so reduced in vitality as to be unable to resist the ordinary tendency to decomposition.

Oysters in hot weather are often unwholesome, perhaps from the causes suggested, or it may be that the collection of liquid secretion between the shell and the contained animal, in hot weather, is in a state favorable to putrefaction upon slight exposure to the air, and that the disagreeable symptoms often said to arise after partaking of this fish as food is due to this as much as anything else.

MINERAL POISONS.

Alkalies, Alkaline Earths, Acids, Metals, Etc.

ACIDS.

Acids.

The common acids, acetic, muriatic, nitric ("aqua fortis"), sulphuric ("oil of vitriol"), are highly corrosive in their action, unless largely diluted, and act with even greater rapidity when taken internally than when applied externally. They are as troublesome in this respect as concentrated alkalies.

When taken, the acid should be neutralized, as far as possible, by giving some harmless alkali. Cooking-soda or saleratus, a teaspoonful of either, in half a glass of water, can be given every few minutes until several doses have been taken. Lime-water might be used for the same purpose, and aromatic spirits of ammonia, besides neutralizing the acid, would be of value as a stimulant. Common soap, from the alkali it contains, might be given.

AMMONIA.

Ammonia.

The ordinary aqua ammoniæ, sometimes known as "hartshorn," acts on the mucous membrane of the stomach as we should expect it to do, knowing its effect upon the mucous membrane of the nostrils. When swallowed, it is a rapid corrosive poison. Owing to its pungency, it can scarcely be given by mistake in a state of purity. With olive oil, it forms the common "hartshorn liniment," and has thus been given internally.

A violently acting corrosive substance, like ammonia, leaves no time for emetics. It is an alkali, and the common dilute acid known as vinegar will neutralize it. Lemon-juice also would answer the purpose.

Other concentrated alkalies, as lime, soda and potash, act in the same manner as ammonia, and when taken internally must be combated in the same way, and with the same difficulties in view.

ANTIMONY.

This metal is rarely accessible in its purity. One of its salts, tartar emetic, or the wine of antimony (which is tartar emetic dissolved in wine), is the usual source of the poison. Vomiting is one of the most distressing and prominent symptoms of poisoning by this substance. Assisted by copious draughts of tepid water, sugar and water, flaxseed water, much of the poison in the stomach may be gotten out. Another symptom is great prostration. If a small quantity only is known to have been swallowed, a teaspoonful of paregoric in a little sweetened water may be divided into three portions, one of them being given every ten or fifteen minutes. It soothes the irritated and excited stomach. Antimony

The antidote usually recommended is nut-galls, or oak-bark in powder. Half a dozen of the former, finely powdered, may be given, mixed with water. The active principle in each of these is what is called tannin, or tannic acid, now to be had of every apothecary and dyer. Ten grains of it (a teaspoonful—it is very light) in water will be equivalent to the nut-galls mentioned. A strong infusion of common green tea

contains enough tannin to make it useful as an antidote. An insoluble, and perhaps inert, tannate of antimony is formed.

ARSENIC.

Poisonous
varieties of
arsenic.

In some places this is called "ratsbane," and poisoning often occurs from it. The yellow sulphuret of arsenic (orpiment), the red sulphuret of arsenic (realgar), and the arsenite of copper (paris green), employed in the arts have all been used internally with fatal effects. All these sources of poisoning by arsenic should be surrounded by every possible precaution to prevent them from being accidentally used. Many "fly-poisons" contain it, and what is used in medicine under the name of Fowler's Solution is a solution of arsenic.

Use of
emetics.

Arsenic acts as an irritant to the stomach and bowels, in many respects like antimony and its preparations. As soon as it becomes known that arsenic or any of its preparations has been swallowed in poisonous doses, the poison taken should be dislodged from the stomach, as far as possible, by vomiting (see "Emetics," page 83), assisted by the finger to the throat, or the feather part of a quill. Free drinking of milk, white of egg and water, or flour and water, should be encouraged. Not only do these things encourage vomiting and dilute the poison, but at the same time they tend to envelop the particles of the poison until the mass can be removed from the stomach.

The antidote to arsenic is the freshly prepared hydrated sesquioxide of iron. This can be had of any

apothecary in a few moments of time. It is quite harmless in character, and may be given in almost any quantity. The iron, in this particular form, combines with the arsenic, forming a temporarily harmless preparation. This newly formed compound should not be permitted to remain and be digested, but must be dislodged afterward by an emetic, which the bulk of the antidote favors.

The antidote
and its
preparation.

The hydrated sesquioxide can be made by almost any one in a few moments. Take a glass tumbler, or a graduated measure, pour in three or four tablespoonfuls (quantity not of much importance) of aqua ammoniæ, and then a tablespoonful or more of tincture of chloride of iron. Instead of the ammonia we may use a strong solution of cooking or washing soda, two or three teaspoonfuls dissolved in as many tablespoonfuls of water.

A thick, dark, reddish precipitate, like brick-dust, is at once seen in the mixed liquids, which may be increased in quantity by gently stirring with a broom-splint.

This precipitate is the sesquioxide, and it must be separated from the liquid by spreading a fine handkerchief or closely woven piece of muslin over a cup and pouring on the mixture. The liquid will run through, leaving the desired oxide of iron as a reddish-brown, jelly-like powder. To free it from any excess of either substance used in its formation, a half pint or so of tepid water should be poured on in a gentle stream to wash the precipitate. The washed precipitate is now ready for use. A teaspoonful of it may be given every few minutes.

Calcined magnesia and pulverized charcoal have also been recommended as antidotes in poisoning by

arsenic, but of their value nothing can be said by the writer.

BARYTA.

This substance, largely used to adulterate certain paints, is sometimes accidentally swallowed in poisonous doses.

Baryta.

The antidote is water, acidulated to about the strength of lemonade with sulphuric acid. This converts the baryta into an insoluble compound, which must be dislodged from the stomach by an emetic. Epsom salt or Glauber's salt may be used instead of sulphuric acid.

COPPER.

Copper.

Poisoning from copper occurs most commonly through the careless use of utensils made of it. Most acids form soluble salts with copper; hence acids should never be used for cooking purposes in copper vessels. Many of the ordinary vegetables and fruits contain enough acid to form poisonous salts with the metal. Even sugar, from the ease with which solutions of it are changed into acids, should be cautiously used in contact with copper. When copper is mentioned it must be understood to include brass and other alloys into which copper enters as a necessary component.

Treatment
of copper-
poisoning.

The stomach must at once be emptied by an emetic, and copious draughts of milk, or the white of eggs mixed with water. Carbonate of soda (the ordinary baking-soda or cooking-soda will answer) is said to be an antidote. As much as will lie heaped up on a

silver quarter can be given every five minutes, in water, or in the other named liquids. Yellow prussiate, or ferrocyanide, of potash is an efficient antidote, if it can be obtained pure.

IODINE.

The common tincture of iodine, used for external application, is the usual form of this poison. Starch, in water, is a mild antidote, and may be freely given until vomiting is secured by an emetic.

Iodine.

IRON.

The form usually taken is a solution of the sulphate of iron (copperas, green vitriol). Its action, like most of the poisons heretofore described, is that of an irritant poison in the mucous membrane (lining) of the stomach and bowels. The antidote is carbonate of soda.

Iron.

LEAD.

Poisoning by this substance usually is due to the acetate of lead (sugar of lead). The carbonate of lead, the "white lead" of the painters, and the red oxide ("red lead") are also sometimes swallowed in poisonous doses. They all act as irritant poisons.

Lead.

The treatment of such cases consists in giving, as an antidote, water acidulated to about the strength of lemonade with sulphuric acid ("oil of vitriol"). Sulphate of magnesia (Epsom salts), or the sulphate of soda (Glauber's salt), in water, are also good anti-

Antidote
for lead-
poisoning.

dotes. After the antidote has been given in poisoning by lead, an emetic should be given.

Chronic
lead-poison-
ing.

When lead is taken for some time in any of the soluble forms in small doses as when water has been kept in leaden vessels, or food kept or cooked in vessels "glazed" with lead, or the use of wines "sweetened" with the same metal, a peculiar train of symptoms slowly follows, known as "lead-poisoning," or "painters' colic." All such possible sources of the introduction of lead into the system should be carefully avoided, and as soon as the effects of the absorption begin to be suspected, no time should be lost in consulting a physician.

LIME.

Lime.

If accidentally administered, acts like ammonia. (Page 90.)

MERCURY.

Mercury.

The bichloride of mercury (corrosive sublimate), often used as a solution in houses for destroying vermin about beds, is a most active poison, when taken internally. The red oxide of mercury (red precipitate) is another dangerous salt of the same metal. When swallowed, the white of eggs should at once be given, and often repeated. In the absence of this form of albumen, common milk can be used, or wheat flour beaten up with water.

These salts of mercury not only irritate the stomach, but so rapidly inflame and destroy it that some writers discourage the use of emetics. If one can be given, however, before the poison has had time to produce

these extreme results, there can be no objection to its use. The continued administration of the antidotes is soon followed, as a rule, by free vomiting.

PHOSPHORUS.

This is probably not often taken in a state of purity. It is the active ingredient of most of the popular "Ex-terminators" for rats and other vermin. These, as well as the ends of matches, have been taken with fatal results. Phosphorus acts as an irritant poison, inflaming the mucous membrane with which it comes in contact.

Phosphorus.

A good antidote is sulphate of copper, five or ten grains of which can be given in water every fifteen minutes until four doses have been taken. The sulphate of copper is also a poison, but it is an active emetic, and all measures must be taken to promote vomiting.

Treatment
of poisoning
by phos-
phorus.

Another efficient antidote is turpentine, especially the old French variety. This can be given in fifteen-drop doses for five or six doses.

As fat dissolves phosphorus, no form of food containing this should be given for a day or two, not even milk or eggs.

POTASH.

The caustic potash, in the form of common lye, or the concentrated lye, when swallowed, acts as other alkalis of the same general character. (See "Ammonia.")

Nitrate of potash (saltpetre), in large doses, say half an ounce or more, taken internally, is followed

Potash.

by poisonous symptoms. There is pain, with heat in the stomach, vomiting, and purging of blood, great prostration, and other symptoms denoting the action of an irritant poison.

No antidote is known. The treatment consists in rapidly evacuating the contents of the stomach by an emetic, and the free administrations of mucilaginous drinks, with some paregoric every little while, to allay the pain and irritation of the inflamed parts.

SILVER.

Silver.

The chief source of this poison is the nitrate of silver (lunar caustic), either solid or in solution. Its action as a "caustic" is well known, and it is in this manner that it acts upon the throat, stomach, etc., when taken internally, in solid stick or in solution.

Nitrate of silver is the base of the numerous popular "hair dyes," and under this form has been accidentally and criminally taken.

Antidote.

The antidote for the salts of silver is common salt, which immediately decomposes and destroys its activity. The rapidity and completeness with which this is done is seen in the well-known domestic precaution of preventing solutions of silver employed as indelible ink from staining, by immediately, while the spot is moist, touching it with salt and water.

SODA.

Soda.

The same things are to be said about this alkali as about ammonia.

TIN.

Several compounds of this substance are used by dyers, and have been used as poisons. They all act as irritant poisons. The treatment consists in copious draughts of milk, white of eggs in water, and flour and water.

Tin.

ZINC.

The sulphate of zinc (white vitriol) might be termed poisonous in very large doses, were it not for the fact that it at once causes vomiting, and is brought up before damage can be done. Hence it is regarded as one of our most valuable emetics.

Zinc.

VEGETABLE POISONS.

Most of the class of poisons termed vegetable act as narcotics or as acro-narcotics. With some modifications, which will be mentioned in place, the treatment of all cases of narcotic poisoning is essentially the same; and a similar statement may be made in reference to the treatment of all cases of acro-narcotic poisoning. Hence, in speaking of the vegetable poison standing first in the alphabetical arrangement of these substances, the directions have been given under two heads: the nature of the acrid or irritating symptoms and the treatment of the narcotic symptoms. In speaking of the other poisons, to save space and avoid repetition, the reader will be directed, for details of treatment, to some one of the substances, where directions are given in full.

Vegetable
poisons.

ACONITE.

Aconite.

Aconite is known under the names of "monkshood" and "wolfsbane." When swallowed in an overdose, it is rapidly followed by symptoms known as acro-narcotic; in other words, irritating to the throat and stomach, and narcotic to the brain and nervous system. The treatment naturally consists in getting out of the stomach all the poison there not already absorbed into the blood. In acro-narcotic poisoning we have two reasons in view for such a course; first, to avoid, as much as possible, the irritating action of the poison on the mucous membrane which lines the stomach and its approaches, and, secondly, to prevent further absorption into the blood and narcotization of the brain and nervous system.

Treatment.

The contents of the stomach are removed by tickling the throat and base of the tongue by the finger or a feather. An emetic (p. 83) of mustard and water, pulverized ipecacuanha, or sulphate of zinc, flaxseed tea, gum-arabic water, sugar and water, milk, white of egg, or things of this general character, should be freely given at the same time to protect the mucous membrane of the stomach from the irritating feature of the poison.

As there is nothing known which will neutralize or destroy the poison in the blood acting through the brain and nervous system upon the important organs of breathing and circulation, the efforts for relief must consist in keeping up the respiration by artificial breathing (page 16) until the kidneys, skin and other organs have had time to eliminate the aconite. As this poison weakens the heart's action, we must freely use stimulants to counteract this effect,

such as brandy or whisky, aromatic spirits of ammonia and strong coffee.

ALCOHOL.

Alcohol itself, or in the form of brandy, gin, rum, whisky, taken in large quantities, is followed by symptoms of a violent poisonous character, and if relief is not at once obtained, death often ensues. The press reports instances not infrequently where children have swallowed alcohol left within their reach, and have died in consequence.

When quantities sufficiently large to be followed by alarming symptoms have been taken, the contents of the stomach should be evacuated without delay, by tickling the throat with a feather or the tip of the finger, by an emetic, such as ground mustard and water, pulverized ipecacuanha, or sulphate of zinc; or the stomach-pump may be used, if convenient. The vomiting should be assisted by copious draughts of warm water.

Treatment
of acute
poisoning by
alcohol.

The alcohol in the stomach having thus been disposed of, the portion which has passed from the stomach into the blood, and has been carried to the brain and to the rest of the nervous system, where its poisonous action is being exerted, next claims attention, should symptoms appear to demand it. The action of alcohol and its preparations upon the brain and nervous system is seen under the common name of intoxication. This may consist of mere stupor, or the brain and nervous system may be so completely overcome by the poison in the blood that the influence of these parts upon the muscular movements of the chest and the heart is no longer kept up, and death ensues

Need of
artificial
respiration.

from asphyxia, as described under that head. For this reason artificial respiration by the Sylvester method (described on p. 16) is sometimes indicated, and may be maintained for hours. Strong coffee is also of much value as a stimulant. The practice of walking the patient around has no merit unless he is able to use his legs himself, and if he can do that, there is no need for the exercise. Cold water douches also are not advisable, although they seem to do good for a few moments. The body and extremities should be kept warm by flannels and hot-water bottles.

BELLADONNA.

Belladonna.

Belladonna, or "deadly nightshade," has been introduced into our gardens as an ornamental flower, and poisoning sometimes occurs from eating the berries or leaves. Solutions of this or of its active principle, atropine, are used under various forms, and should never be left where they can be swallowed by mistake.

Atropine.

Symptoms
of poisoning.

Belladonna acts as a narcotic poison, like opium in many respects, only there is dilation, to a marked degree, of the pupil of the eye, and a peculiar redness or suffusion of the face, which are not seen in poisoning by opium. The duskiess of the face is the symptom first observed by the physician. To discriminate between the two, it may be remarked, that stramonium (thorn apple, jimson weed) gives results closely resembling belladonna. Both of these substances—belladonna and stramonium—are attended, when swallowed in large doses, with a peculiar dryness of the throat and mouth, delirium, not accompanied at first with stupor, like opium, but with violent gestures, often violent laughter, and a peculiar disposition to

pick in the air, or at the clothing, for imaginary objects.

Treatment similar to that for aconite poisoning.

BRYONY.

The root of this plant, when swallowed in sufficient quantity, acts as an acrid, highly irritating poison. It is quite a common plant in Europe, but less seen in the United States.

If taken in poisonous quantities, empty the stomach as soon as possible; and, as in the case of all highly irritating poisons, this should be followed by free drinking of milk, flaxseed tea, white of egg and water, sugar and water, gum-arabic water, and similar things

Bryony.

CAMPHOR.

When taken in large doses, camphor acts as a narcotic poison. The contents of the stomach, in such cases, should be evacuated by an emetic (p. 83), followed by draughts of warm water, flaxseed tea, gum-arabic water, milk and similar substances. The strong odor of camphor in the breath and perspiration, in case of poisoning, with narcotic symptoms, would naturally indicate the character of the poison.

Camphor.

CARBOLIC ACID.

This is frequently used as a poison nowadays. In some cases the action is so promptly fatal that there is no time for treatment. If possible, the stomach should be evacuated, and large doses of any soluble sulphate, such as Epsom or Glauber's salts, should be given. As the prostration is apt to be great, these will have to be followed by stimulants.

Carbolic acid.

DIGITALIS ("FOXGLOVE").

Digitalis.

This beautiful plant of the garden, cultivated in this country for its flower, and used, in proper quantities, as a valuable medicine, is a poison of the narcotic class, with a disposition to overcome the portion of the nervous system controlling the action of the heart.

Treatment
of digitalis-
poisoning.

The treatment is very similar to that for aconite poisoning, although in medicinal doses this drug is used to strengthen the heart's action. The reason for this apparent inconsistency is that in poisonous doses digitalis enormously over-stimulates the heart, so that in a little while it becomes very tired, and its action becomes weak. At this time, however, some other stimulant may still be effective until the poisonous influence of the digitalis has been eliminated. Great care must be taken to keep the patient flat in bed. Even sitting-up may be sufficient to stop entirely the already weakened heart.

DULCAMARA ("BITTER SWEET," "WOODY NIGHT-SHADE").

Dulcamara.

This well-known plant belongs to the narcotic class of poisons, with symptoms like those of belladonna and stramonium. The treatment is the same as for aconite.

HYOSCYAMUS ("HENBANE").

Hyoscyamus

This vegetable, made use of in medicine, if taken internally in improper quantities, acts as a narcotic poison, like others of the same natural order (*Solanacæ*), such as belladonna, dulcamara and stramonium.

The treatment is the same as for aconite.

LOBELIA ("INDIAN TOBACCO").

This vegetable is not now much used as a medicine by physicians, as comparatively recent chemical discoveries have added substitutes to the list of drugs, which do not possess the peculiar disadvantages of this substance. Lobelia.

In poisonous amount lobelia belongs to the class of acro-narcotics spoken of under the head of "Aconite" (p. 100). Fortunately one of the symptoms following its use is vomiting. This should be encouraged by drinks of tepid water, gum-arabic water, etc.; and, if kept up until all the poison is rejected by the stomach, a favorable issue may be expected. Should vomiting not occur at once, as a symptom, enough of the poison may be absorbed into the blood to exert a fatal narcotic influence upon the brain and nervous system; or, to speak more precisely, through these organs upon the movements of respiration and circulation.

OPIUM.

This substance, or the numerous preparations of it used in medicine, is one of the most frequent causes of poisoning a physician is called to see. A common mistake is that of confounding laudanum and paregoric; a teaspoonful of the former contains six grains of opium, but of the latter only one-quarter of a grain. When the latter is supposed to have been given by the nurse, the mistake is not found out until it is often too late to be of material service in averting a fatal end. Morphine, the active principle of opium, is often kept as a solution, in private houses, for domestic use. Sources of
opium
poisoning

Any of these preparations of opium, in improper doses, are followed by symptoms of narcotic poisoning. Not only these, but many popular nostrums, as "infant cordials" and soothing syrups of various kinds depend for their utility upon some preparation of opium, and are hence often followed by symptoms of narcotic poisoning. None of these things should be used. If a child cries, it does so usually because it feels pain; and instead of making it stupid with narcotics so that it can not feel the pain, it is better to go to work to find out the cause and remove it. There is some reason for the suspicion that, in many instances, where a modicum of the popular remedies of this class are not furnished by the mother to the nursery, the enterprise of the nurse ("rather than see the child suffer"), secures it from a neighboring apothecary shop for the charge committed to her care.

Opium, its preparations, and the active principle of the drug, morphia, all act in the same way, by absorption into the blood, and distribution by it to the brain and nervous system. Through these organs the movements of the chest and heart become more or less interfered with. In this respect, its action is essentially like that of carbonic acid gas, alcohol and most of the vegetable poisons herein described, without, however, any acrid or irritating complication.

Treatment
of opium
poisoning.

Treatment.—What is in the stomach must be taken out, to prevent further absorption, and what is in the blood must be worked out, under proper guidance, by the processes of nature constantly engaged with such products. If the breathing and circulation tend to cease, because of the inability of the brain and nervous system to temporarily discharge these duties,

these essential movements must be taken charge of by a friend.

An active emetic, like ground mustard, must be given at once, remembering that trouble may be found in getting it to act, because of the diminished sensibility to its presence, from the local stupefying action of the opium upon the mucous membrane of the stomach. The action of the mustard should be assisted by tickling the inside of the throat with the fingers or a feather.

Sulphate of zinc, salt and water, pulverized ipecacuanha may be given; in fact, anything to empty the stomach as soon as possible.

If the respiration is not suspended, but is going on at a diminished rate, above eight to the minute, artificial respiration is not required, until the number of respiratory movements of the chest falls below this. A strong stimulant, in the shape of twenty or thirty drops of aromatic spirits of ammonia in a tablespoonful of water, may be given three or four times, at intervals of a couple or more minutes. It is better than brandy, or anything alcoholic, because the mode of action of brandy is much the same upon the brain as opium, and it might be rather adding to than taking from the poison that is at work. A few tablespoonfuls of very strong, freshly made coffee is a useful thing to give in such cases. If potassium permanganate can be obtained, it should be given in doses of five grains in water every fifteen minutes until four doses have been taken.

Treatment
in mild
cases
of opium-
poisoning.

The most efficient antidote is belladonna or its active principle, atropine. Ten drops of the tincture of belladonna or one-hundredth of a grain of atropine should be given every fifteen minutes until four doses

Antidote.

have been taken. No more than this should be given without the advice of a physician.

Treatment
in severe
cases
of opium-
poisoning.

When the respirations get below eight to the minute, it is necessary to resort to artificial breathing by Sylvester's method (see p. 16). We may have to keep this up for hours before all danger is past. It is well to stop every fifteen minutes for a minute or two in order to see if the natural respirations will maintain themselves at a rate over eight a minute. As long as this is the case we can rest; but the breathing must be carefully noted all the time and counted with a watch. The body and extremities must be kept warmly covered and hot water bottles used, if necessary. The old measures of walking the patient around or of dashing him with cold water are only mentioned in order to be prohibited. They exhaust without doing any good.

After-
treatment.

In case medical assistance shall not have been secured, and the patient shows signs of improvement, in the shape of more frequent respirations, stronger pulse and returning consciousness, many of these measures may be omitted as the apparent necessity disappears. In a short time the patient will appear as a person who is soundly sleeping from the effects of a full dose of opium or other narcotic, the quantity beyond that having been parted with by the blood. He may now be let alone, unless some return to the previous condition is noticed, when a dose or two of the strong and easily procured stimulant, aromatic spirits of ammonia, or coffee, may again be given him. If necessary, artificial respiration must be resumed.

OXALIC ACID.

This substance is largely used in the arts, and in private households, for removing stains of iron from textures and surfaces, which it does by combining with an otherwise insoluble salt of iron, and converting it into a soluble oxalate of iron, easily removable by water. From the strong resemblance oxalic acid bears to Epsom salts, it has often been taken instead of the well-known purgative of that name. To avoid the possibility of such an accident, oxalic acid should be kept in another part of the house from which medicines are kept, and no precaution omitted, by label and other marking of the parcel, to make the difference between them as decided as possible. It is well to remember also that, wholly unlike Epsom salts, the taste of oxalic acid, applied to the tongue, is quite sour.

Oxalic
acid.

When swallowed internally the activity of this poison admits of no delay. It belongs to the class of irritant poisons spoken of so often, and produces death chiefly by destructive action on the mucous membrane (lining) of the throat, stomach and bowels.

Time can scarcely be lost to give an emetic; but something must be given to rapidly combine with the poison and divert its activity from the parts mentioned. It has a strong affinity for lime, forming with it a comparatively insoluble oxalate of lime; and for magnesia, forming with it an insoluble oxalate of magnesia, which can be dislodged with less haste. A teaspoonful of lime from a whitewash bucket or at the bottom of the bottle of lime water, when made as directed in another place (page 162), mixed with a cup of water, might be given every few minutes, or some

Antidote for
oxalic acid.

crushed chalk (a carbonate of lime), or some magnesia, may be given. All these things can easily be had, and not a moment need be lost in getting the person to swallow them. The common "whiting" used for polishing glass, making cheap paint and putty, is essentially the same as prepared chalk. After the oxalic acid is supposed to have been neutralized, an emetic of ground mustard or pulverized ipecacuanha may be given.

Scraping the ceiling or wall will not procure the antidote if plaster of paris has been used instead of common lime, as is often the case. The often recommended mantel images of plaster of paris are also of little use. Lime in the sulphate (plaster of paris) is too firmly united to the sulphuric acid to give it up for oxalic.

Oxalate of
potash, or
salts of
lemon or
sorrel.

Oxalate of potash, commonly called salts of lemon or salts of sorrel, produces the same result as oxalic acid, and the treatment is the same.

PULSATILLA.

Pulsatilla.

The eating of this plant, "meadow anemone," or parts of it, has been followed by symptoms of acro-narcotic poisoning. The plant is so active at times that when applied externally, irritation to the parts touched is felt. When poisoning results from swallowing it, the course of treatment recommended under "Aconite" (p. 100) may be followed.

SANGUINARIA ("BLOOD-ROOT").

Sanguinaria

Taken internally in an overdose, acts as acro-narcotic poison. See "Aconite" (p. 100).

SAVINE.

This is an active irritating poison, inflaming the stomach and bowels. When thus taken, vomiting, by tickling the throat with the finger or a feather, should be at once induced. The mucous membrane (lining) of the bowels should be protected from the irritating action of what has escaped beyond the stomach before it could be emptied by vomiting, by drinking large quantities of water or milk, with good quantities of gum-arabic dissolved in it. If the oil of savine, which is the usual form of the substance when used with a criminal intent, has been taken, it might be well to take a dose of castor oil.

Savine.

SPIGELIA.

The use of this plant, commonly called "pink root," as a destroyer of worms, was given, it is said, to the whites by the Cherokee Indians, and has become very general throughout the entire country. It is given with a great deal of confidence and recklessness, and is often followed by symptoms of a narcotic character, attended also with convulsive movements. When such poisonous symptoms follow its use, vomiting should be promoted and kept up by frequent draughts of warm water. As in the case of other narcotics, a drink of strong coffee may be of service. Acidulated drinks, as water and vinegar, water with lemon juice, are thought to be useful, and probably are, in favoring the elimination of the poison absorbed into the blood, by the action of the skin and kidneys.

Spigelia.

STRAMONIUM.

Stramonium

Usually known as "thorn apple" or "jimson weed," belongs to the same natural order in botany as belladonna, dulcamara and hyoscyamus; and when taken internally, in improper quantities, is followed by similar general symptoms. Children often gather the seeds and eat them. A history of the case, the evidence of some of the seeds or capsules, the narcotic symptoms, with the peculiar duskiness of the face and dryness of the mouth and throat mentioned when speaking of belladonna, are sufficient to point out the vegetable used. There is a decided disposition to laugh and to pick at imaginary objects on the part of the person under its effects.

Treatment is the same as for aconite.

STRYCHNIA.

Strychnia.

This is the active principle of the *nux vomica*, or "dog button," as it is sometimes called, from the use often made of it. This poison acts in a peculiar manner upon the nervous system, throwing the muscles of the body into strong convulsive movements. There is a disposition during the convulsion, for the heels and the back of the head to meet (*opisthotonos*), under the influence of the violent muscular movements. Whenever this is seen, and if seen it will surely be remembered, the coincidence between it and the use of strychnia should be remembered.

The stomach should be evacuated with the least possible delay, if it is known the person has just taken the poison. The patient must be kept quiet in bed in a room which is darkened and has the windows and

doors shut. Thirty grains of bromide of sodium or potassium should be given at once and may be repeated in fifteen minutes. Ten grains of chloral hydrate can be added to each dose with marked benefit. It may be necessary to repeat these medicines a third or even a fourth time, but care should be taken not to overdose.

Treatment.

TOBACCO.

To a person not accustomed to its effects, tobacco is an acro-narcotic poison, agreeing in its essential character with aconite, and others of the same general class. The movements of the heart become so much interfered with that death may take place unless proper assistance is at once given. Fortunately, like lobelia, it acts as an emetic, and before enough can be absorbed into the blood from the stomach, the contents of that organ are rejected. Hence, when death has ensued from the direct use of tobacco we find that it was used as an injection, a form in which it should never be given.

Tobacco.

OTHER VEGETABLE POISONS.

Besides those enumerated in the foregoing pages are many others, whose names even cannot be here given. Most of them belong to the acro-narcotic class and may be treated as advised in speaking of those mentioned under that head. See "Aconite" (page 100).

SECTION IV.

CARE OF INVALIDS.

To those who are lying upon beds of anguish and possibly mortal illness, there can be nothing more comforting than the thought that a policy of insurance in THE MUTUAL LIFE INSURANCE COMPANY OF NEW YORK protects those who are dependent on them.

VENTILATION.

Most readers know that the bodies of animals are constantly undergoing changes; the old particles, becoming worn out and useless, are thrown into the blood and carried away, while new ones are taken from the blood and put in their places. These decaying particles, as soon as they become useless, must be carried away through the blood and out of the body. The chief means by which this end is accomplished is through the use of pure air, which washes away these impure particles from the blood. This air enters pure, through the mouth and nostrils into the lungs, and comes out laden with these poisonous materials. If these decaying particles are taken into the lungs again, they not only prevent the escape of the poisonous materials from the body, but really add more poison to it. Soiled air can no more purify soiled blood than soiled water can cleanse soiled clothes. There is one thing that can do it, and that is, plenty of pure air.

The blood is purified by fresh air.

Now, the question is, how much pure air does it require to answer this purpose? You may have some idea of it when you remember that an ordinary man spoils not less than 3,000 cubic feet of pure air every hour. A sick person needs much more. He should never be put in a room that contains less than 1,500 cubic feet of air space, *i. e.*, it must be at least 15 feet long, 12 feet wide, and 9 feet high, allowing a little for furniture. Even then the ventilation needs to be very good.

Amount of air needed for purifying the blood.

Not only is the air of a room made impure by breathing, but it is made impure by the gas we burn as a

Effect of gas
and stove on
the air.

light. It is estimated that an ordinary burner consumes as much air as eleven men would do—that is, one gas burner in three-quarters of an hour consumes as much air as would answer a man for a whole night. If there is an ordinary stove in the room it destroys as much air as would twenty-five men. All these facts and estimates must be thought of when you hesitate sometimes about putting up or letting down a window a few inches.

Do not close
a fire-place.

If the house is an old one there may be a fireplace in the room. If so, do not attempt to seal it up “because the air comes in”—as air is just the thing you want—but leave it open, or at least the best part of it. If the house is a more modern one, there, is perhaps, a “flue”; if so, do not upon any excuse attempt to close it, but let it alone.

Fresh air
must enter
and foul air
escape.

A great many persons have an idea that this letting-in of pure air, or “ventilation,” means raising a window a little from the bottom, or opening a door a short distance. They never mind much where the window or door opens into—it is all the same, so they open somewhere. The idea is not correct. Ventilation not only means providing a way for the pure air to come in, but for the bad air to get out. This can usually be accomplished by drawing down the top sash a few inches, which will let the heated impure air out of the room, and by raising the lower sash a few inches to let the fresh air into it. If you wish to know that the hot air really goes out at the upper opening, hold a lighted candle near it, when the blaze will be carried outward by the force of the escaping current; and if you will hold it to the opening below, the flame will point inward from the current of cool air which comes from without. A more certain

way to secure the proper amount of fresh air is to have openings on opposite sides of the room, so that the air will circulate through the chamber as much as possible.

Remember not to have the current play over the bed on which the person lies sleeping, as the person might catch a cold. But if there is no other way—and some rooms are so constructed that no other means appear possible—it is better to open the windows, and escape the effects of the draught, by putting an extra covering over the person. Should there be only one window in the chamber, raise that and open the door a little. If you can contrive no means by which a desirable amount of pure air can be permanently secured, bear the matter in mind, and some day when your physician comes in ask him about it. Persons who habitually sleep in badly ventilated houses are seldom compelled to wait long for such an opportunity, as he is frequently summoned to the occupants of these houses.

Avoid a draft
if possible.

If pure air is so important to people who call themselves in health, how much more important is it to those who are sick. The lungs try to throw the load off, as can be detected by the heavy odor of the breath; the skin is trying to do the same thing, as you will perceive by its sickly, clammy feeling; and a physician will see that a dozen different attempts are made in one place or another, with the same object in view. These noxious materials, as they are cast off, tend to poison the surrounding air; so we must assist nature in relieving the patient by keeping a constant supply of fresh air in the chamber where he lies. Not only do we assist in curing the patient, by carrying away these poisonous materials

Importance
of fresh air
to the sick.

by plenty of pure air, but, at the same time, we greatly lessen the chances of other persons contracting disease by breathing the contaminated atmosphere.

Prevalence
of contagious
diseases in
winter.

Most observers have noticed that certain contagious diseases, as small-pox, scarlet-fever, etc., are very apt to prevail during the winter. The reason is a simple one—because the poisonous or contagious principle is kept confined in the room through fear of admitting the cold. It becomes so concentrated and virulent that it is capable of producing the disease in others. In warmer weather, this prejudice against fresh air does not exist; the doors and windows are kept open, the fresh air enters in abundance and dilutes the emanations so much that they lose their power to extend the disease. These diseases then diminish until closed doors come again with the cold weather. This is not only the case in low fevers, scarlet fever, etc., but the same principle holds true with most other diseases, so that the first and last thing a nurse should do is this:

Keep the air the sick person breathes as pure as the air outside without chilling him.

New air
must not be
already foul.

Many persons think, as before remarked, that the right thing has been done if a door or window is opened, never minding where the air comes from, whether from a close entry, a foul kitchen or even from an untidy water-closet. If the air does come from any such place, the sick-room is not aired, but only more poisoned. The kind of air one requires is the best air of the neighborhood, and this usually comes from the outside of the house.

With plenty of open windows to let in the pure air, and a little burning fuel to take off the chill, it is an easy matter to get that kind of air which all sick

persons need. It is a rare thing for a person to "catch cold" while in bed. Indeed, some physicians say they never saw a case of it from such a cause, and if the bed-clothes are properly tucked in about the shoulders it is hard to imagine how such a thing could occur, unless the air is so cold that it acts upon the lungs as it would upon the ear, nose or fingers, directly inflaming the organs of respiration as if by "frost bite."

Difficulty of
"catching
cold" in bed.

TEMPERATURE.

Cold has been called "the great enemy of age," and as the same inability to resist death is found in the sick as in the aged, cold may be said to be the great enemy of the weak. The report of the Registrar-General of Great Britain for the cold months of the year 1875 shows that, while there was no new malady, but only the familiar forms of bronchitis, phthisis pulmonalis (consumption) and pneumonia (inflammation of the lungs)—always holding their own in the returns of the causes of death—yet these well-known diseases were answerable for a number of victims greatly in excess of the average. Thus, where the weekly average for ten years from the three specified causes had remained about stationary during the prevalence of the cold weather of December, there was an increase of twenty-five per cent. in the death rate. The probable or, at least, the only assignable cause of this mortality, was the low temperature which prevailed. This is true as to the *cause* of death; and the same authority shows that the death rate from all causes, among persons 60 years old and upward—which

Influence of
cold.

previously stood at 62 per thousand of all the deaths from these causes—rose during seven cold weeks to 130 per thousand, and during the cold weather of the last two weeks of December, 1874, rose still higher, to 150 per thousand.

Influence of
heat.

While cold leads to a great mortality among the weak and aged and the very young it cannot be doubted, on the other hand, that in warmer latitudes reliable statistics would prove that the heat of summer leads to quite as great a mortality among the aged and debilitated. Ordinary observation will satisfy any one of the truth of this about young children. Now, for practical purposes, there is a little difference between an aged or a young person and a *sick* one. Hence, because violent and extreme changes should be avoided, as much as possible, at the periods of life mentioned—cold proving most destructive to the aged, and heat to the young—a corresponding carefulness should be observed in regard to the *sick* of every age.

One avoid-
able way
of catching
cold.

The consideration of these facts naturally leads to the inquiry whether we are helpless under the conditions which they disclose; but common sense and experience fortunately show that we are not. While the susceptibility is doubtless increased by the sudden variations of temperature referred to, the question appears whether the still greater variations to which people unthinkingly expose themselves may not be quite as dangerous. In this respect, an audience just leaving a hall or place of amusement is an instructive sight. It includes numbers of delicate women who habitually dress in furs and warm wraps, who have been sitting for two or three hours, with low dresses, in a heated, vitiated and relaxing

atmosphere. These wait, before starting home, in a cold, draughty lobby, standing in thin shoes, and while talking and laughing with their friends, take deep breaths of the raw cold air into lungs which have been previously breathing a vapor-bath. Many of these changes of temperature incident to the customs of society are of a purely artificial character, scarcely to be resisted by the strong with the best of health. The waste of health and strength is often too great for the robust, and the weak had better avoid them.

Many of the illnesses deplored under this head are doubtless due to the direct shock given by the sudden entrance of a volume of cold air into the lungs, which could have been avoided almost entirely by the simple expedient of breathing only through the nostrils, and keeping the lips closed, so that the air would have become warmed before entrance into the lungs.

Breathe
through the
nose.

The sudden changes from heat to cold do not all take place away from home. Many "colds" are due to the arrangement of private houses, which appear to be built for neither heat nor cold, and do not resist either. A person going from the house to the outside cold air has been taught to put on a coat; but a person going from one room to another has not this fear, and steps into a cold bath without warning. We say cold bath, for practically the communicating entries of the house, with gas-burners at every landing of the stairs, are as well devised a means of getting the heat from the lower rooms, where needed, to the garret, where not needed, as if specially designed for the purpose—particularly if the lower outside doors are occasionally opened. Invalids should therefore always pass through entries

Risks within
the house.

and long stairways as well protected as if going into cold air on the other side of the front door.

Invalids
must not be
chilled.

A time when people are very apt to catch cold is just after getting up from a warm bed, when the skin has become somewhat relaxed from many hours, or perhaps days, of lying there, and is rendered less capable of reaction. The same temperature which refreshes a patient in bed while protected by the bed-clothing, might destroy the patient just arisen. Common sense will tell us that while we want pure air, we of course want that which cannot chill the sick person.

A cold is
frequently
the result of
debility.

After all, a cold is as often the result of debility as the direct exposure to a draught of cold air. If each individual will observe his own case the next time a cold is contracted, he will find, more than likely, that it was preceded some days by lassitude, headache, more or less inability to exercise the thinking faculties with the usual success, disturbed digestion, etc., etc. These symptoms have all become exaggerated by a very slight exposure, and sometimes the cold appears without any remembered exposure. When the above-named symptoms appear, it is wiser to examine into their cause rather than to inquire what particular exposure to a draught of air gave rise to the cold. A discovery of the remote cause of the attack may place it in the power of the person to prevent a recurrence, and a judicious, generous diet and attention to fresh air will often give more relief than "Squills" and other domestic remedies of the same kind.

In many diseased conditions much less heat is produced than in health; and there is a constant tendency to a decline and ultimate extinction of the vital powers by the call made upon them to sustain the heat

of the body. In such cases, the patient should be carefully observed every little while, and as soon as this tendency is discovered, the temperature of the body should be kept up by heat externally applied, as warm bricks, tin cans or bottles filled with hot water, etc. Such cases of decline of the heat of the body occur at all times, even in summer. This coldness, indicating a decline of vitality, is most apt to happen toward morning, at the time the effect of the preceding day's diet begins to be exhausted. Everybody knows that it is usually toward the morning that we begin to suffer from the effects of cold, because the vital forces are then beginning to slacken from the want of food. If this is the case in health, it is the same in disease. Hence, from midnight until nine or ten o'clock the next morning, the condition of the patient should always be carefully watched, and as soon as want of heat is noticed the nurse should at once take means to counteract it.

Invalids produce less heat than the well especially in the morning.

During the day time the temperature of the room should be kept about 70 degrees. The night temperature should vary according to the health of the occupant. If that is good, it can be as low as 50 degrees, or even 40 degrees, without discomfort, provided the bed-covering is sufficient. If the occupant is an invalid, the temperature should not fall much below 60 degrees. It will often be necessary to stir up a little heat in the early morning to prevent too great a fall.

Temperature of room.

CHAMBER UTENSILS.

Nothing should ever go into the "slop-pail" of a chamber but the refuse water from the wash-basin, etc., and then it should stand no longer than necessary. *Under no circumstances whatever should the contents of any utensil used about the bed ever go into it.**

* Some observations by Florence Nightingale upon these matters are given here from "Notes on Nursing":

"The use of any chamber utensil *without a lid* should be utterly abolished, whether among sick or well. You can easily convince yourself of the necessity of this absolute rule by taking one with a lid, and examining the under side of that lid. It will be found always covered, whenever the utensil is not empty, by condensed, offensive moisture. Where does that go when there is no lid?

"But never, never should the possession of this indispensable lid confirm you in the abominable practice of letting the chamber utensil remain in a patient's room *unemptied* except once in twenty-four hours—*i.e.*, when the bed is made. Yes, impossible as it may appear, I have known the best and most attentive nurses guilty of this; aye, and have known, too, a patient afflicted with severe diarrhoea for ten days, and the nurse (a very good one) not know of it because the chamber utensil (one with a lid) was emptied only once in twenty-four hours, and then by the housemaid who came in and made the patient's bed every evening. As well might you have a sewer under the room, or think that in a water-closet the plug need be pulled up but once a day. Also take care that your lid, as well as your utensil, be always thoroughly rinsed.

"If a nurse declines to do this kind of thing for her patient, 'because it is not her business,' I should say that nursing was not her calling. I have seen surgical 'sisters,' women whose hands were worth to them two or three guineas a week, down upon their knees scouring a room or hut, because they thought it otherwise not fit for their patient to go into. I am far from wishing nurses to scour. It is a waste of power. But I do say that these women had the true nurse-calling—the good of their sick first, and second only the consideration what it was their place to do—and that the women who wait for the housemaid to do this, or for the charwoman to do that, when their patients are suffering, have not the *making* of a nurse in them.

"Earthenware, or, if there is any wood, highly polished and varnished wood, are the only materials fit for patients' utensils. The very lid of the old abominable close stool is enough to breed a pestilence. It becomes saturated with offensive matter, which scouring is only wanted to bring out. I prefer an

DISINFECTANTS.

An able medical lecturer in Philadelphia is in the habit of tersely saying before his class that fumigations, as a rule, act on the principle of "one stink stinking out another stink." There is a deal of truth about it. The popular idea is that they destroy filthiness. Used in the ordinary way, they can do no such thing. They only make filthiness less evident, because they make the odor less perceptible, which is an indication of its presence. Remove the cause, and all the unpleasant effects must cease.

Fumigation
is usually
worthless.

At the present time it is known that many diseases are caused by small living organisms, called microbes. Among these diseases are consumption, cholera, yellow fever, typhoid fever, typhus fever, diphtheria, whooping-cough, small-pox, measles, scarlet fever and several others of less importance. Each of these is caused by its own particular microbe, which can be transferred to a healthy person and then start up the original disease. These microbes may be present in the dejections, in the vomit, in the expectoration, in the breath, or may be detached from the skin. In

Diseases
which are
due to
microbes.

earthenware lid as being always cleaner. But there are various good new-fashioned arrangements.

"A slop-pail should never be brought into a sick-room. It should be a rule invariable, rather more important in the private house than elsewhere, that the utensil should be carried directly to the water-closet, emptied there, rinsed there, and brought back. There should always be water and a cock in every water-closet for rinsing. But even if there is not, you must carry water there to rinse with. I have actually seen in a private sick-room the utensils emptied into the foot-pan, and put back unrinsed, under the bed. I can hardly say which is most abominable, whether to do this or to rinse the utensil in the sick-room. In the best hospitals it is now a rule that no slop-pail shall ever be brought into the wards, but that utensils shall be carried direct, to be emptied and rinsed at the proper place. I would it were so in the private house."

order to destroy them it is necessary to use disinfectants which will kill them. In order to be of any avail, a disinfectant should remain in contact with the substance to be disinfected a sufficient length of time to accomplish the object in view, otherwise it is valueless.

Among the disinfectants the following are the most important. For convenience they will be called

STANDARD DISINFECTANT SOLUTIONS.

Standard
disinfectant
solutions

NO. 1. CHLORIDE OF LIME.—This has an odor which is quite offensive to many. It bleaches clothing readily and may even destroy delicate fabrics. A standard solution of 4 per cent. strength is made by adding six ounces to a gallon of pure water.

NO. 2. BICHLORIDE OF MERCURY.—Commonly known as "corrosive sublimate." This cannot be used in contact with metal, as it is precipitated. A standard solution is made in the strength of 1 to 500 by adding fifteen grains to a pint of water.

NO. 3. CARBOLIC ACID.—A standard solution of 5 per cent. strength is made by adding seven ounces to the gallon of water.

NO. 4. SOLUTION OF CHLORINATED SODA.—Commonly called Labarraque's Solution. It bleaches vegetable colors slowly. A standard solution of this in 10 per cent. strength is made by mixing it with nine parts of water.

NO. 5. CHLORIDE OF ZINC.—A standard solution of this in 10 per cent. strength is made by adding a pound to the gallon of water.

All of these solutions are very poisonous and must be handled with care. To leave a dish of carbolic acid

in the room or to sprinkle some chloride of lime on the floor does not hurt the microbe unless the microbe happens to fall into it. Disinfectants must be applied directly and thoroughly to the microbe-carrying substance in order to do their work properly. The following rules are given for the purposes noted.

Disinfectants must be applied thoroughly.

FOR EXCRETA.

Mix each stool thoroughly with two quarts of No. 1, the standard solution of chloride of lime, or of No. 3, the standard solution of carbolic acid. Let it stand at least one hour with the former and four hours with the latter before emptying. For privy-vaults and cesspools, use liberal amounts of No. 2, the standard solution of mercury bichloride, or of No. 3, the standard solution of carbolic acid, and scatter plentifully over the surface chloride of lime in powder. Rub down the walls frequently with No. 3, the standard solution of carbolic acid. These measures are of especial value in cholera, typhoid, dysentery and tuberculosis. In cholera, diphtheria, yellow fever and scarlet fever, all vomited material should be treated in the same way.

Disinfection of excreta.

FOR THE EXPECTORATION.

This should be discharged into a cup containing a considerable quantity of No. 1, the standard solution of chloride of lime, or of No. 2, the standard solution of mercury bichloride, to each pint of which fifteen grains of potassium permanganate has been added. It should remain in this for several hours before emptying. All cloths which have been used to wipe the mouth should be burnt. These measures

Disinfection of expectoration, especially valuable in consumption.

are of great importance in consumption, diphtheria, scarlet fever and infectious pneumonia. When it is remembered that one-seventh of all deaths occur from consumption in some of its forms, and that it is very frequently caught by inhaling dried sputum, the importance of thorough disinfection in this disease cannot be too highly insisted on.

FOR CLOTHING AND BEDDING.

Disinfection
of clothing
and bedding.

If of little value, destroy by fire. If it can be washed, boil for at least half an hour, or immerse for at least four hours in No. 2, the standard solution of mercury bichloride diluted twice, or in No. 3, the standard solution of carbolic acid diluted once. If it cannot be washed, expose it for two hours to a dry heat at a temperature of 230 degrees Fahr., at least. Mattresses should have the cover removed or freely opened before disinfection. In fact, it is better to destroy them and blankets by fire.

FOR THE PERSON.

Disinfection
of the
person.

The hands and bodies of the attendants and of convalescents should be washed with No. 4, the 10 per cent. standard solution of chlorinated soda, or No. 3, the standard solution of carbolic acid diluted one-and-a-half times.

FOR THE DEAD.

Disinfection
of the dead.

Envelop the body in a sheet thoroughly saturated with No. 1, the standard solution of chloride of lime, or No. 2, the standard solution of mercury bichloride, or No. 3, the standard solution of carbolic acid.

FOR THE SICK ROOM.

While occupied, wash all surfaces occasionally with No. 2, the standard solution of mercury bichloride, diluted once, or No. 3, the standard solution of carbolic acid, diluted once.

After the patient has been removed, wash all the walls, floor and ceiling, and all other surfaces in the room. Then close it tightly by stuffing rags or papers in the cracks of the windows and doors. Burn in it at least three pounds of sulphur to every 1,000 cubic feet. A good way to do this is to take a washtub and put in it a few inches of water and several bricks. On the bricks place an iron pot containing the sulphur. Pour over this a pint of alcohol and set fire to it. Let the room remain closed for at least twenty-four hours. Then wash all the surfaces with No. 2, the standard solution of mercury bichloride, diluted once, or of No. 3, the standard solution of carbolic acid, diluted once, and then with soap and water. After this use quantities of fresh air and as much sunlight as possible.

Disinfection
of sick-room

Do not think that this question of disinfection is of little moment. If you remember that "an ounce of prevention is worth a pound of cure," you will understand that a few cents spent for disinfectants may save you a doctor's bill and possibly a funeral. And if you use them at all, do it thoroughly. Unless disinfection is well done it is worse than useless, for it will induce a false sense of security. If you fail, do not blame these principles, but your own lack of attention to detail in carrying them out.

Value of
disinfect-
ants.

CLEANLINESS.

Lack of
cleanliness
in the house.

A house may be filthy even where there is not a pile of dirt anywhere to be seen. Carpets, filled with dust and saturated with grease, uncleansed furniture, old papered walls of years' standing, are just as much sources of impurity to the air as a refuse heap in the cellar. They defile the atmosphere quite as much, and more or less tend to encourage disease. Sweeping with a broom certainly can remove much dirt from a floor, but what it does not sweep out it scatters through the air, making little true improvement. After the dust "settles," the room is usually "dusted," which practically means whipping the dust from one piece of furniture to another with a bunch of feathers. It really seems that the dust had better be left alone, unless it can be removed altogether, and the only way to do this is to *wipe* everything with a damp cloth. The floor of a sick room should really be without a carpet, or if there is one, it should be well beaten before the patient goes into the room, and again well beaten and aired as soon as the person is done with it.

Untidiness a
drawback to
the sick.

Few people—no matter who they may be—have any idea of the exquisite cleanliness required in the sick-room. The smoky chimney, the dusty furniture, the utensils emptied but once a day, even in the best houses, keep the air of the sick-room constantly dirty. What a person in health "may put up with" for a night only, may prove a source of suffering, postponement of recovery, or even the hastening of a fatal end, to the sick person who is confined there, perhaps in one posture for twenty-four hours.

None but those who have been sick, and know from personal experience, can tell how much delicious com-

fort may be secured by the careful washing and proper drying of the skin. It is not the mere feeling of comfort which has been obtained, but an absolute relief of the vital powers by the removal of something which was oppressing them. Cleanliness of skin and ventilation have much the same end in view—the removal of noxious materials from the system as rapidly as possible.

Comfort to the sick from bathing.

The various methods of washing the sick cannot be given here for want of space; besides this, the physician is always ready to give any advice which may be needed. Care should be taken, in all these operations of sponging, washing and cleansing the skin, not to expose too great a surface of the body at once, as this might check the perspiration and retard the recovery from disease or renew the trouble in some other form.

Do not chill the skin.

In several varieties of diarrhœa, dysentery, etc., when the skin is hard and harsh, the relief to the sick person from washing with water and an abundance of soap is almost beyond calculation. In other cases, sponging with tepid water and soap will be ordered, then with tepid water alone, followed by proper drying of the skin with a soft warm towel. Sometimes when water alone is to be used, a little vinegar added to it makes the sponging more refreshing. Of course, no one would think of using vinegar at the same time that soap is used. Bay rum or cologne is very acceptable, also, to the face, neck and hands of sick people, when used after sponging or bathing. If not convenient to use this, some common spirits diluted with water may be substituted.

Various ways of bathing an invalid.

In this connection, it may be well to remark that special care should be observed in the use of water for

Do not have
the water
too cold.

bathing persons suffering with debility, the result of sickness or of age. In such persons, it is often seen that a bath which could be used with benefit in robust health, or at a younger age, is followed by palpitation of the heart, slackened pulse, more or less vertigo, shivering, and other feelings of discomfort, which last some time after its use. In ordinary cases, it may be accepted as a good rule that whenever a bath, hot, tepid, or cold, is followed by a sense of oppression or inconvenience of any kind, it has not done good, and it may be well to suspect it having done harm. The amount of heat required to vaporize moisture is much larger than is popularly supposed, and if the person, aged or sick, or both, has not that surplus of heat to spare for the special purpose, over and beyond what he is likely to need for the ordinary purposes of the body, more or less disastrous results are invited from the reckless expenditure. Even healthy persons, accustomed to a morning bath of cold water, sometimes feel an instinctive repugnance to it, and on such occasions this should not be disregarded, but some other form of bathing used. A sponge bath or a warm bath in a well-heated room will answer better, followed by drying with a warm soft towel.

By *age*, the writer does not mean the number of technical years the person has lived, but refers rather to the effect which the work he has done has had upon the "constitution," as it is called.

LIGHT.

A dark house, wherever found, is always an unhealthy one as well. Want of light discourages

growth, promotes scrofula, encourages "consumption," and, in fact, everything else which is bad. It is the unqualified experience of all who have had opportunities of judging, that light is second only in importance to fresh air; and the next worse thing after a close room is a dark one. Many suppose that it is upon the spirits only that sunlight acts, and not upon the body. The reverse is the case. It does the body good, and the brighter spirits show it.

Importance
of light.

If possible, the sick-chamber should be the sunniest room of the house, and if the bed can be so placed that the person lying on it can see a good piece of the blue sky, so much the better will it be. If the patient can see out of two windows instead of one, he will be twice as well off. It is found in all hospitals that rooms facing the sun have fewer deaths, all other things considered, than such as are upon the shady side of the house; and where statistics have been kept for a period of years, it is found that the average time for recovery is less upon the sunny side than upon the shady side of the building. Not only do fewer patients die, perhaps, in the southerly exposed sides of hospitals, and sick people get well there faster than those on the northern exposure, but it has been shown recently that in asylums, prisons, etc., more of the inmates become ill who are compelled to dwell on the shady side of the building than of those who live on the sunny side.

Great value
of sunshine
in sick room

The first time the reader of this passes through the ward of a hospital, let him observe how almost all the patients lie with their faces turned toward the light. Ask one of them why he does so, and he will scarcely be able to give you an answer; but you see he does it. The reason is deeper down than his understanding. It is his nature to do so, just as it is the nature of

plants to always make their way toward the light, and their leaves or flowers to incline toward the sun. While you are looking at the faces turned toward the sunlight, count how many sick you see lying with their faces toward the wall. Among a hundred patients not more than half a score will be seen avoiding the light.

REST.

Effect of
noise on an
invalid.

The loudness of a noise often does not hurt a patient. The putting up of a scaffold nearby, perhaps, will not trouble him—he knows what that is; while whispering or talking may annoy him beyond endurance. To some, however, any kind of noise is disturbing. A sharp and sudden noise, which is not steady, usually gives more distress than other kinds. Anything which suddenly awakens a patient out of his sleep will throw him into greater excitement, and consequently do him more harm than any continuous sound, however loud it may be.

Do not
waken a
sleeping
patient.

When a patient sleeps never under any circumstances let him be awakened, unless you have the sanction of the physician. A sick person who has been asleep but a little while, and is then awakened, can very seldom go to sleep again; while, had he slept a few hours, and then been aroused, he might have fallen asleep again in a few minutes with little effort. The reason is something like this: In a sick person the brain, as a usual thing, is weakened and debilitated like the other parts of the body and needs strengthening. It gets this by sleep, which is rest. If rest is interrupted a few minutes after it begins, the brain is weakened so much more, and tends the less to sleep. The brain, therefore, not only loses the good of the

little sleep it has had, but also its ability to sleep, becoming what physicians call "irritable." If a patient sleeps for a time, the brain becomes so much the stronger, and can the more readily rest the next time.

No noise which excites a patient's expectation should be made in his room. Hence, no one should ever speak in low tones near the bed of the patient, or hold a conversation in a room or passage where the sick person can occasionally overhear a word. This is absolutely cruel.

Do not
whisper
before a
patient.

Another thing is frequently done by a thoughtless nurse. When she wishes to make some special inquiry of the physician in regard to the condition of the patient, she usually remains in the room until the physician is ready to leave it and then states, with an air of conscious importance, that she has "something particular" to ask him about the patient.

NURSES.

The tact and qualities needed in the sick-room are not always the result of experience, nor do amateur nurses always possess them. Now and then a lady is born to them, and the physician to that house rejoices exceedingly; for his own credit, as well as the recovery of the patient, is probably assured. He seldom, however, has this good fortune, because geniuses are not common. Many nurses cannot observe, and they will not think. The fire is alternately half extinct, and blazing up the chimney. It is not warm at sunrise and sunset, and moderate at midday, when the sun shines warmly. No care is taken to continue a priceless sleep, by keeping the cinders from falling on the unprotected fender; or to gently restore the

Amateur
nursing
usually a
failure.

fire by quietly putting on lumps of coal, previously wrapped in pieces of damp paper, ready for noiseless use. The desired morning meal is brought in after the patient has passed from appetite to faintness. More than likely the tea is smoked. It is painful to see a patient in the hands of such a careless nurse, however.

Affection not
a substitute
for experi-
ence.

Affection only, however warm, will not qualify a sick-nurse for her position. The cool head and steady hand of a professional stranger is often to be preferred. Many a life has been sacrificed by ignorance, stupidity or anxiety of the affectionate nurse who undoubtedly would have gladly died to save the patient.

A good nurse should have keen perceptions and the nice ways of a lady, and at the same time she should not be above supplying all the patient's needs. She should never talk of the dying agonies of her last case, or relate any of her previous cases whatever they might have been. She should be able to judge when the patient must be kept quiet and when he may see a friend. Such a person, without giving offense, must assume the responsibility of forbidding the discussion of worrying, household troubles in the sick-room, or even getting rid of a visitor who stayed too long—especially of that class of persons who seem unwilling to lose a single opportunity of displaying bad taste and insensibility by telling the patient how some one else with the same symptoms had recently died in extreme convulsions. The lugubrious countenance assumed by such a visitor to harmonize with her conceptions of importance, usually confirms the fears of the sick person to a remarkable degree, and the nurse has increased labor in quieting the apprehensions thus cruelly excited.

Tact of a
trained
nurse.

Conversations upon any subject should never be held just outside the chamber door, where a word now and then can be overheard by those in the room; and, as intimated, what is overheard, with what is suspected, by the poor patient, is frequently the beginning of the worst. Remember always that a cheerful face "doeth good like a medicine."

Never, under any circumstances, ask within hearing whether the physician does not think the patient worse, or ask the physician his opinion as to the result of the disease. Indeed, no question or reply calculated in any way to suggest an unfavorable issue, should, under any pretext, be indulged in before the patient. There is a good deal of human nature even in sick people.

A trained nurse commences her arrangements for the night *before* the patient begins to grow sleepy. She knows that arranging the pillows, moving the chairs, stirring the fire, and making up her own bed disturb the rest of the sick person. Sometimes an amateur does not think of this, and is surprised because the patient lies awake all night. A good nurse will also see in advance that nothing from down-stairs, likely to be needed before morning, has been omitted.

It is the experience of most nurses that, when a person is too sick to read, he is too sick to listen to the reading of any one else. If you do read, let it be done slowly, distinctly and steadily. Sick people almost always prefer having a thing told to having it read to them.

The eyes of the convalescent and debilitated are easily injured by use. The greatest care should be taken, therefore, to use them as little as possible before recovery. Quite aside from the patient's strength, the usual absence of the necessary amount of light for

Do not ask the physician about the patient in his presence.

Make all arrangements for the night early.

Do not read much to a patient.

Do not let a patient read much.

reading purposes makes reading in a sick-room almost as dangerous to the sight as the use of print in the growing twilight—well known to be peculiarly destructive to the vision.

No one but an old nurse, or a person who has been ill for a long time, can possibly know what a weary, dreary thing it is to be confined to the same room for a great while, and see no change in anything about it. It will be found that the majority of cheerful patients are those who are not confined to a single room, and the majority of depressed cases will be seen among those subjected to a long monotony of objects surrounding them. The nervous system really appears to suffer as much from want of change as the digestive organs would from continuance upon a single diet—*i. e.*, the soldier from his “three years or during the war,” of boiled beef. Unless a person has been sick, and has learned from personal experience, he can scarcely realize what a pleasant thing it is to see beautiful objects and brilliant colors while recovering from illness. Such cravings are termed “fancies” by some; but no matter what they are called, these indications are always valuable and should never be disregarded. The senses of sight and hearing require natural and innocent gratification as much as the stomach demands appropriate food. It is a helpful satisfaction to indulge them, and it should be done. If the indulgence makes the sick person get well the faster, a wise nurse will observe these “fancies,” and make them assist convalescence.

It is a popular prejudice that plants and flowers should not be tolerated in the chamber, “because they give off carbonic acid gas, which is poisonous.” So they do give off this gas, and the gas is poisonous;

Make some
variety in
the sick
room.

Plants and
flowers may
be allowed.

but the quantity of carbonic acid gas given off from half a dozen bunches of flowers in half a dozen nights would scarcely equal the amount of the same gas given off from a couple of bottles of mineral water. The odor of certain flowers, as lilies, hyacinths, etc., is unpleasant to some people, and whenever such is the case, the objectionable ones should, of course, be avoided in the selection. A judicious variety in the colors should always be sought, and it may be well to remember that scarlet is rather stimulating in its effects, while blue is rather soothing.

In convalescence, even more than in illness, the attentions of an inexperienced nurse are often trying to an invalid. If he has been well nursed, he may still be amenable to the discipline of the sick-room, and will probably do what he is bid. If he has not learned to do as told without question, he has still many things to learn before he gets well. At first, perhaps, he will be allowed to sit up hours, when minutes was the physician's orders. He is able to persuade the nurse to give him a tumblerful when a wineglass was allowed. He is allowed to see a newspaper for a few minutes, and he reads an exciting novel. He is permitted to see a visitor, and has a roomful of company. He leaves the house for the first walk, muffled up, and is allowed to sit on a cold garden seat. Upon returning home exhausted, there is no nourishment ready for him, and probably the *warm*ed clothing is taken off to put on his *cold* house suit.

Risks during
convales-
cence.

FOOD.

A little food at a time and often repeated, is the general rule for sick people. Frequently, where a

A little food
at a time.

physician orders beef-tea, or something of the kind, a nurse will try to give a cupful every three or four hours. More than likely the patient's stomach rejects it, whereas, had a tablespoonful been given every half hour or so, it would have been retained, digested and have done the patient the intended good.

A little food
early in the
morning.

The majority of weak patients are unable to take food of any solid kind before eleven o'clock in the morning, and before that time comes around they are sure to be pretty well exhausted. This would not be so apt to occur if a spoonful of beef-tea, of wine and arrow-root, of whisky-punch, or of whatever stimulant has been ordered by the physician, could be given them every hour or two, from the early morn until then. Perhaps by noon, or even sooner, they might be able to eat food as substantial as a mutton-chop or a piece of nicely broiled beefsteak. If food as solid as these cannot be taken, of course the nurse will persevere in the use of beef-tea, prepared milk, or whatever else the physician has ordered.

Dangers of
alcoholics.

In this connection, it may be well to make a few remarks about the use of brandy, whisky and other stimulants for the sick. They are always easily obtainable, and therefore, oftenest used. But where there is any hereditary tendency to the use of such things, where the individual has ever shown a disposition to use them as a beverage, or where the associations of the person in the future may peculiarly expose him to solicitation, none of these stimulants, under any consideration, should ever be ordered, unless there is absolutely no alternative. This is said, because in many instances substitutes can easily be found by the physician.

The susceptibility of the very young to all forms of alcoholic stimulants must also be remembered. Where we would give a tablespoonful of whisky or brandy every three or four hours to an adult a child of two would get ten drops every hour or two, a child of five a teaspoonful every two or three hours. If we are not careful, we are very apt to overstimulate a child.

Susceptibility of the young to alcoholics.

Never leave the patient's food untasted by his side from meal to meal, in the hope that he will eat it. He never does eat it, and you only add disgust to his distaste, by leaving it in sight. Let the food be brought at the right time, and if it is not eaten, be sure to take it away in a little while.

Do not leave a patient's food by his side untasted.

A sick person's plate should never be overloaded with food, nor should he ever see or smell the food prepared for others. While eating, the patient should be left alone as much as possible.

Do not overload the plate.

Whatever is prepared for the sick must always be of the first quality, and cooked with the greatest care. Remember that sick-cookery should at least do half the work of the patient's weak digestion.

The best of food and cooking.

Always keep your patient's cup and saucer perfectly dry, so that no drops of liquid will fall on the sheets, pillow or dress. As a rule, nurses have no idea what a difference this minute want of care makes to the comfort and even willingness of the sick to take food.

Keep the cup and saucer dry.

Florence Nightingale says on this subject that one of the most common errors among women in charge of the sick, respecting sick diet, is the belief that beef-tea is the most nutritive of all articles. "Now just try," she says, "and boil down a pound of beef into beef-tea, evaporate the water, and see what is left of your beef.

Beef-tea is of little value.

You will find that there is barely a teaspoonful of solid nourishment to half a pint of water in beef-tea." There is, nevertheless, a certain nutritive value in it, as there is in tea. It may safely be given in almost any inflammatory disease, but it should never be alone depended upon, especially where much nourishment is needed.

Do not
overrate the
value of
eggs.

Again, it is an ever-ready saying that "an egg is equivalent to a pound of meat," whereas it is not so at all. Much trouble has occurred from this mistaken notion. It is a question whether, weight for weight, eggs are equal to beefsteak. Also, it is seldom noticed with how many patients, particularly those of nervous or bilious temperament, eggs disagree. Most puddings made with eggs are distasteful to them in consequence. An egg, whipped up with wine, is often the only form in which they can take this kind of nourishment.

Meat alone
may produce
scurvy.

Again, if the patient is able to eat meat, it is supposed that to give him meat is the only thing needful for his recovery; whereas scorbutic (scurvy) sores have been known to appear among sick persons living in the midst of plenty, which could be traced to no other source than this—namely, that the nurse, depending on meat alone, had allowed the patient to be without vegetables for a considerable time, these latter being so badly cooked that he always left them untouched. To all intents and purposes, he really had no fresh vegetables at all.

Animals
require
albumin

Animals require in their food an albuminous constituent, a starchy one, and another of fat. The first, or albuminous (the purest form of which is the white of an egg), enters largely into the formation of the human body, the muscles being chiefly composed of it.

The second, or starchy component, does not enter into the structure of the body as such, but is converted into sugar during digestion, and has much to do with the formation of the tissues and heat. starch,

The oily parts enter largely into the composition of the brain, nerves, and, in fact, all other portions of the body, and, when broken up and consumed, supply a good portion of the fuel for heat of the body. fat,

Besides these three mentioned, which are most conspicuous, there are other substances, as common salt, phosphates, iron, etc. These are supplied through food, but our space will not permit more than a mere reference. All food must contain these substances in proportionate quantities. If it does not, the appetite craves the one missing, and if not properly supplied, the part of the body which needs the deficient component suffers. and salts.

To feel assured of this, if the reader thinks a moment, he will remember that no one likes bread alone, but wants with it some butter, which supplies the oily part, and the appetite craves, too, a piece of meat, cheese, or an egg—the albuminous part. We want butter with our rice or potatoes, because rice or potato is almost pure starch, and wanting in fatty matter; so nature says we must add the wanting parts. All should be present in the food.

As all food which properly sustains man must contain these principles, it will be readily seen that those vegetable substances which are composed of but one of them, or even two, cannot alone support life. Experience confirms this view. Oils or fat are useful as oils or fat, but cannot supply the place of starch or sugar; nor can starch or sugar supply the place of albumen or flesh. Life cannot be sustained on one or even two.

Great value
of milk.

To obtain all these needful constituents, we must seek a variety in our food, and not depend exclusively upon any single one for continued use. There are some apparent exceptions to this rule, as in the case of milk, which we know is capable, under certain circumstances, of sustaining life for a length of time; but when we examine into the matter the exception is only apparent, for milk contains all of the constituents necessary for perfect food. It has the starchy part advanced a step into the shape of sugar, the albuminous part as the cheesy constituent, and the fatty as the creamy element. Hence milk can be taken as a sort of representative diet, and one better adapted to sustain the body in health, or to strengthen it in sickness, than any single article of food.

Value of
flour and
cereals.

Flour made from wheat, meal from oats or Indian corn, grits, etc., come next in order, perhaps, and stand at the head of the list of all articles of food grown for general consumption. Food of the above description is made up chiefly of starch, some albumen (under the form of gluten), and a certain amount of oil. Hence, bread made of flour may well be called the "staff of life," because, from containing these elements, it is capable of supporting life by itself, for a longer time than any other single article of food, excepting milk, as mentioned above. But, though containing these essential elements of life, yet flour, without the addition of albuminous or oily matter, to a certain degree, cannot long properly sustain the human body.

Value of
starches.

If flour cannot nourish the body in a proper manner, it will at once be seen that corn-starch, arrow-root, tapioca, and the like—which are nothing but pure forms of starch, made by washing away the oily and glutinous (albuminous) parts—cannot possibly be ex-

pected, when used alone, to afford more than a limited amount of nourishment; not, of course, as much as food prepared from flour, which has in it the deficient articles. Not only is flour more nutritive than arrow-root, or any preparation of starch, but it is less liable to ferment, and, as a rule, it should be preferred whenever it can be used.

Do not misunderstand what is meant. None of these articles, compared with flour, are spoken of as useless to the body; but some preparations for the sick must be more useful than others, because they contain more of the elements of usefulness in the shape of albumen, starch, oil, etc.

But if fresh milk is so valuable a food for the sick, the least sourness in it makes it, of all articles, perhaps, the most injurious. Diarrhœa is a common result of fresh milk allowed to become at all sour. The nurse, therefore, ought to exercise the utmost care in this particular. Yet if you consider that the only drop of real nourishment in your patient's tea is the drop of milk, and how much all patients depend upon their tea, you will see the great importance of not depriving your patient of this milk.

Milk should be very fresh.

The desire shown by the sick, and especially by those who are getting well, for acid fruits, as oranges, baked apples, cranberries, lemons, etc., should never be disregarded. The important use the acids of fruits play in the body is a long story; so we can only insist upon the importance of regarding these "cravings" wherever found. Sometimes the physician has good reasons for not wishing them given, as the acid may neutralize or decompose some remedial agent employed, but as a rule these fruits, properly prepared, may not only be given without injury, but with de-

Acid fruits are often grateful.

cided benefit. So, whenever a sick person has a craving for such things, be sure to call the physician's attention to it, and ask if you can give them.

Jelly contains almost no nourishment.

Calves-foot jelly is another article of diet in great favor with nurses and friends of the sick. Even if it could be eaten solid, it would not nourish. It is simply the height of folly to take one-eighth ounce of gelatine and make it into a certain bulk by dissolving it in water, and then to give it to the sick, as if the mere bulk represented nourishment. It is not generally known that jelly does not nourish, that it has a tendency to produce diarrhœa, and to trust to it to repair the waste of a diseased constitution is simply to starve the sick under the guise of feeding them. If one hundred spoonfuls of jelly were given in the course of the day, you would have given one spoonful of gelatine, which spoonful has scarcely any nutritive power whatever.

How to make beef-tea.

Dr. Christison says that "every one will be struck with the readiness with which certain classes of patients will often take diluted meat-juice or beef-tea repeatedly, when they refuse all other kinds of food." But beef-tea as ordinarily made is really only a stimulant, very much like coffee. To make a beef-tea that contains considerable nutriment, as well as stimulant, cut a thick piece of good, juicy steak into lumps about the size of a small lemon. Broil each piece slightly and then squeeze it thoroughly in an ordinary lemon-squeezer, or, better still, in one of the small meat-presses that are made nowadays for this purpose. You will not get a great deal of juice, but it is a fair nutriment for the sick. It can be served hot or cold, with salt and pepper to suit.

A great deal too much is said against tea* by wise people, and a great deal too much tea is given to the sick by foolish people. When, however, you see the natural and almost universal craving in the sick for their "tea," you cannot but feel that nature knows what she is about.

Value of
tea and
coffee.

But a little tea or coffee restores them quite as much as a great deal; and a great deal of tea or coffee impairs the little power of digestion they have. Yet a nurse, because she sees how one or two cups of tea or coffee restores her patient, often thinks that three or four cups will do twice as much. This is not the case at all; it is, however, certain that there is nothing yet discovered which is a substitute to the patient for his cup of tea; he can take it when he can take nothing else, and he often can take nothing else,

But do not
give too
much.

* Persons about to incur great exhaustion, either from the nature of the service, or from their being not in a state fit for it, are frequently advised to eat a piece of bread. I wish the recommenders would themselves try the experiment of substituting a piece of bread for a cup of tea or coffee, or beef-tea, as a refresher. They would find it a very poor comfort. When soldiers have set out fasting on a fatiguing duty, when nurses have to go fasting in to their patients, it is a hot restorative they want, and ought to have before they go, and not a cold bit of bread. If they can take a bit of bread with the cup of hot tea, so much the better, but not instead of it. The fact that there is more nourishment in bread than in almost anything else has probably induced the mistake. That it is a fatal mistake there is no doubt. It seems, though very little is known on the subject, that what "assimilates" itself directly, and with the least trouble of digestion, with the human body, is the best under the above circumstances. Bread requires two or three processes of assimilation before it becomes like the human body. The almost universal testimony of men and women who have undergone great fatigue, such as riding long journeys without stopping, or sitting up several nights in succession, is that they could do it best upon an occasional cup of tea—and nothing else.

Let experience, not theory, decide upon this as other things.

if he has not it. It would be very desirable to have the detractors of tea point out what to give to a patient after a sleepless night, instead of tea.

When to give
tea or coffee.

If you give it at five or six in the morning, the patient may even sometimes fall asleep after it, and get, perhaps, his only two or three hours' sleep during the twenty-four. At the same time, you never should give tea or coffee to the sick, as a rule, after five o'clock in the afternoon. Sleeplessness in the early night is usually due to excitement, and is increased by tea or coffee; sleeplessness which continues to the early morning is often from exhaustion, and is relieved by tea.

BEDDING.

In looking for an example of what not to do, we may take the specimen of an ordinary bed in a private house; a wooden bedstead, two or even three mattresses piled up above the height of a table, with a valance attached to the frame. Nothing but a miracle could ever thoroughly dry or air such a bed and bedding. The patient must certainly alternate between cold damp after his bed is made, and warm damp before, both saturated with organic matter,* and this from the time the mattresses are put under him until the time they are picked to pieces, if this is ever done.

Consider that an adult in health exhales by the

* For the same reason, after washing a patient, if you must put the same night-dress on him again, always give it a preliminary warming at the fire. The night-gown he has worn must be, to some extent, damp. It has now become cold from having been off him for a few minutes. The fire will dry and at the same time air it. This procedure is much more important than with clean things.

lungs and skin, in the twenty-four hours, one or two pints of moisture, loaded with organic matter ready to enter into putrefaction; that the quantity in sickness is often greatly increased, the quality is always more noxious—and ask yourself where does all this moisture go? Chiefly into the bedding, because it cannot go anywhere else. It stays there, because, with the exception of a weekly change of sheets, scarcely any other airing is attempted. A nurse will be careful to fidgetness about airing the clean sheets, because of their dampness, but airing the used sheets because of noxious damp will never occur to her. Besides this, very dangerous effluvia we know arise from the excreta of the sick. These are placed, at least temporarily, where they must throw their effluvia into the under side of the bed, and the space under the bed is never aired; it cannot be with our arrangements. Must not such a bed be always saturated, and be always the means of introducing again into the body of the unfortunate patient who lies in it that poisonous matter which nature is trying to get out of the system?

Sheets
should be
changed
daily or
thoroughly
aired.

If a bed is higher than a sofa, the patient often prefers not to get out at all, rather than undergo the fatigue of getting out. Were the bed a low one, he might often feel like taking a few minutes' exercise every day in another room, or even in the open air. It is very odd that people never think of this, or of how many more times a patient who is in bed for twenty-four hours is obliged to get in and out of bed, than are those who only get into bed and out of bed once during the twenty-four hours.

Bed should
be low and
near the
window.

A patient's bed should always be in the lightest spot in the room; and he should be able to see out of a window.

It is scarcely necessary to say that the old four-post bed with curtains is utterly inadmissible. Hospital bedsteads are in many respects very much better than private ones.

Coverings
should be
light.

Never use anything but light blankets as bed-covering for the sick. The heavy cotton impervious counterpane is bad, for the very reason that it keeps in the emanations from the sick person, while the blanket allows them to pass through. Weak patients are invariably distressed by a great weight of bed-clothes, which may prevent their getting any sound sleep whatever.

How to
arrange
pillows.

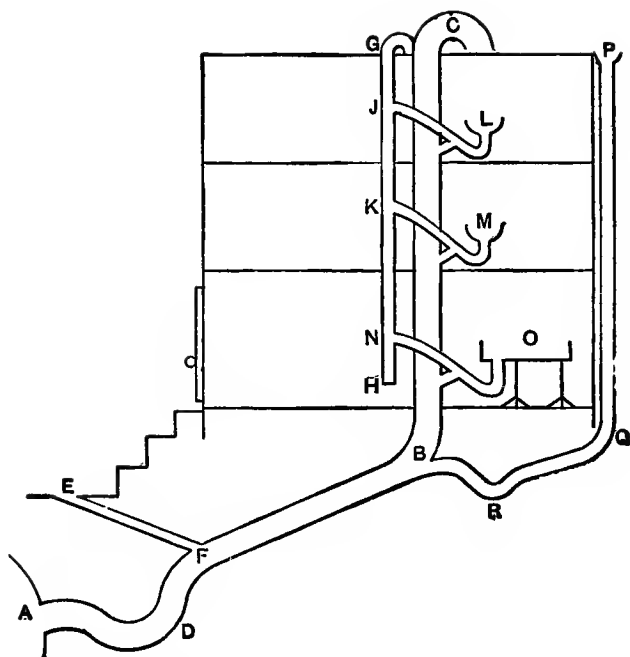
One word about pillows. Every weak patient, be his illness what it may, suffers more or less from difficulty in breathing. To take the weight off the poor chest, which at best is hardly up to its work, ought therefore to be the object of the nurse in arranging his pillows. Now, what does she usually do, and what are the consequences? She piles the pillows one upon the other like a wall of bricks; the head is thrown upon the chest, and the shoulders are pushed forward, so as not to allow the lungs room to expand. The pillows, in fact, lean upon the patient, not the patient upon the pillows. It is impossible to give a rule for the arrangement of pillows, because it must vary with the figure of the patient. Tall patients suffer much more than short ones, because of the drag of the long limbs upon the waist. But the object is to support, with pillows, the back below the breathing apparatus, and above the hips; so as to allow the shoulders room to fall back, and to support the head, without throwing it forward. The suffering of exhausted patients is greatly increased by neglect of these points. And many an invalid, too weak to

drag about his pillows himself, slips his book or anything at hand behind the lower part of his back to support it.

DRAINAGE.

This should be constructed so as to keep out of the air of the house any admixture of sewer-gas, but it often fails entirely, owing to incorrect or defective plumbing. The danger is not so much from the sewer-gas itself as it is from the germs of disease which may be present. These are not volatile, but are sprayed up into the air of the sewer by the breaking of bubbles on the surface. Their weight is so light that they are carried about by the air-currents. In order to prevent disease from this source, the house must be properly plumbed. To do this, the soil-pipe should open on the roof, and every trap should be back-aired. The diagram on the following page shows these points.

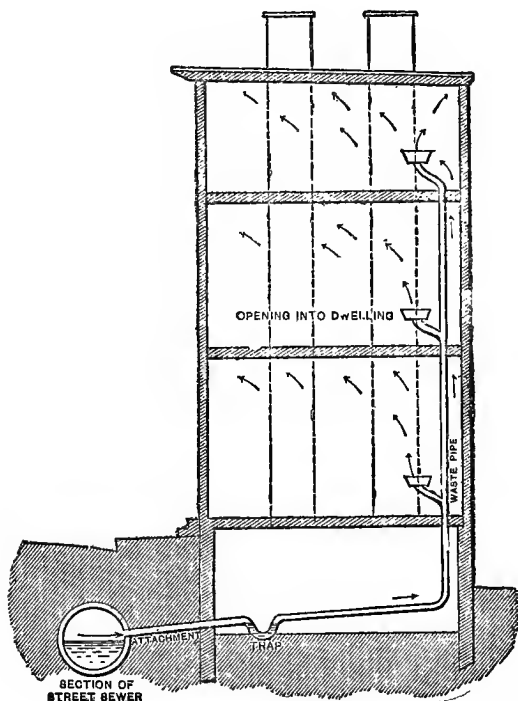
Besides the conditions enumerated which are absolutely essential, there are some others which it is well to bear in mind. The soil-pipe should be of iron and 4 inches in diameter. After it changes from the perpendicular it should have a slope of 1 in 30, so as to insure a current of at least $4\frac{1}{2}$ feet per second. The traps should be the S-shaped siphon traps, preferably without pans or hoppers, but flushing directly. The water-closets should not communicate directly with the house-tank, but with small waste-preventer tanks, which are filled automatically from the house-tank.



A is the sewer. A B C is the soil-pipe, opening on the roof at C, and trapped at D. E F is the ventilating-pipe, communicating with the soil-pipe just behind D. G J K H is the ventilating-pipe to the traps, opening on the roof at G and giving off branches at J K and N to the traps of the fixtures L M O, which branches are connected on the soil-pipe side of the traps as indicated. P R is the leader from the roof, connected with the soil-pipe at B and trapped at R. The object of E F is to have a constant current of air blowing through the pipe. The air in B C being within the house, becomes heated and escapes through C, while fresh air enters through E F. The object of G H and its branches J K N is to prevent siphoning of the traps by an action similar to that of a Sprengel air-pump.

* (The engraver has made all the traps in the diagram too shallow except at R. They should be so deep as to divide the U-shaped column of water into two distinct limbs, connected only at the bottom.)

It is impossible for sewer-gas to enter a house plumbed in this way. But oftentimes many of these precautions are neglected, and the results are quite graphically shown in this diagram:



SECTION V.

REMEDIES.

Next in value to the prevention of disease or accident is indemnity for the possible results of both. THE MUTUAL LIFE INSURANCE COMPANY OF NEW YORK, by its policies provides such indemnity,

REMEDIES.

In this section we will discuss briefly the simple remedies, both internal and external, which it is advisable to have in the house. Even in a city, where a drug store is always near, one will find it convenient and comfortable to have something of a medicine-chest. In the country it is almost an essential.

Nowadays most medicines can be obtained in the form of tablets, each containing a definite quantity of drug, and we strongly urge the use of these whenever possible. The dosage is accurate, and the medicine keeps almost indefinitely without change or deterioration.

When liquids must be used, it is advisable to keep them in bottles with ground-glass stoppers. Most liquids evaporate slowly through an ordinary cork, and the result varies according to the nature of the preparation. In some, such as aromatic spirits of ammonia, it becomes very weak, and even useless. In others, such as laudanum, it may become two or three times as strong. We can readily appreciate how harmful an unknown change in either direction might be.

Powders should be kept in wide-mouthed bottles. They undergo changes less readily there than in boxes, either of wood or pasteboard.

There should always be a label on the bottle, even if there is one on the stopper too. In that way confusing mistakes can be avoided.

All the medicines should be kept in one box or closet, which should be securely locked. The key to

this should be put in some place where children cannot get it. In this way both destruction of property and risk of life will be avoided.

We will divide remedies into two groups, internal and external, and will arrange them alphabetically in each.

INTERNAL REMEDIES.

ALCOHOL.

This is of great value as a stimulant, and some form of it should be kept on hand. The best varieties for medicinal purposes are brandy, whisky and champagne, but in an emergency any kind of liquor or wine may be used. Brandy and whisky contain about 50 per cent. of alcohol, port and sherry about 18 to 20, champagne about 15, red and white wines 8 to 12. The dose varies greatly according to the needs of the case. It should be borne in mind that children are rather susceptible to alcohol. Where a tablespoonful of whisky would be used in the case of an adult, we would give under similar circumstances to a child of two thirty drops; to a child of six a teaspoonful.

AMMONIA.

This is an excellent stimulant and antacid. It is used in the form of aromatic spirits of ammonia. The dose of this is thirty drops to a teaspoonful in half a glass of water. It can be repeated as often as necessary.

ATROPINE.

This is the active principle of belladonna, and is used in the form of sulphate of atropine. It is of great

value in poisoning by mushrooms or opium. It can be obtained in tablets, and the dose is one one-hundredth of a grain, equivalent to ten drops of the tincture of belladonna.

BELLADONNA.

See "Atropine," which is always to be used if we can get it. If not, the tincture of belladonna can be given in doses of ten drops. This can be obtained in tablet form.

BISMUTH.

This is used in the form of the subnitrate or subcarbonate of bismuth. These are both white insoluble powders, and may be used interchangeably. Either of them is of great value in all forms of diarrhoea and dysentery. It can be given quite freely, an even teaspoonful every two or three hours not being excessive.

It is also used as a drying powder over wounds, and has the great merit of being absolutely non-poisonous and bland.

BLACKBERRY BRANDY.

This is used in diarrhoea and dysentery as a stimulating astringent. The dose is a tablespoonful every two or three hours.

BROMIDE.

This is of great value in allaying nervousness and promoting sleep, and also in strychnine poisoning. Either the bromide of sodium or potassium can be used, preferably the former. The dose is ten to twenty grains. It can be obtained in tablet form, but we

should be careful to dissolve the tablets before administering.

CALOMEL.

The value of this as a purgative is too well known to be described here. Formerly it was given in too large doses. Three or four half-grain tablets will work just as well as ten grains in powder.

CASTOR OIL.

This is of great value as a preliminary purgative in all forms of diarrhœa and dysentery. The dose is one or two tablespoonfuls. The disagreeable flavor can be largely overcome by rinsing the mouth out thoroughly with a teaspoonful or two of raw brandy or whisky, both before and after taking the oil.

IPECAC

This is a depressing emetic, and is of especial value in croup. It is so slow in its action that we prefer the sulphate of zinc in a case of poisoning. The dose of the powdered drug is fifteen grains, which can be repeated in twenty minutes. We generally give to children a teaspoonful of the syrup every twenty minutes until vomiting is produced.

LIME WATER.

Put in a quart bottle a piece of freshly slacked lime as big as an English walnut. Fill the bottle with water and shake thoroughly. Let it stand, and in twenty-four hours we will have as good lime-water as can be made. It can be kept in the same bottle, care

being taken not to disturb the sediment. The bottle may be filled twice more with water, the same lime being used. After that the sediment should be cleaned out and fresh lime introduced.

MUSTARD.

This is a stimulating emetic. A teaspoonful can be stirred into a pint of water and a glassful of this given every fifteen minutes until vomiting is induced.

OPIUM.

The best preparation of this is the deodorized tincture, which has the same strength as the ordinary tincture, commonly called laudanum. The dose is five drops, repeated every two or three hours if necessary. It can be obtained in tablet form. Children are very susceptible to opium, and for this reason we give them the very weak preparation known as paregoric, the proper name of which is the camphorated tincture of opium. The dose of this for a child of two is ten drops; for one of three, thirty drops; for one of five, a teaspoonful. Even in these doses it should be used with great caution.

QUININE.

The best preparation of this is the bisulphate. It can be obtained in tablet or pill form.

SALTS—EPSOM AND GLAUBER'S.

The former is sulphate of magnesium, and is quite bitter. The latter is sulphate of sodium, and is much pleasanter to take. They are both purgatives, in doses of two to four teaspoonfuls dissolved in a glass of water.

SULPHATE OF ZINC.

This is a very prompt emetic, and of great use in case of poisoning. The dose is twenty grains, which can be repeated every fifteen minutes until vomiting is produced. Three or four powders of this size should always be kept on hand.

EXTERNAL REMEDIES.

BICHLORIDE OF MERCURY.

This is commonly called "corrosive sublimate." It is of great value as an antiseptic and disinfectant. It is now very conveniently put up in tablet form. If each tablet contains 7 3-10 grains, this can be dissolved in a pint of water, making a solution of the strength of 1 to 1,000. If a quart of water is used, the strength of course will be 1 to 2,000. These solutions should not be put in metal dishes, as the mercury will leave the water and unite with the metal. As corrosive sublimate is a very deadly poison, all precaution must be used to prevent its being taken internally.

BORIC ACID.

This is not at all like an ordinary acid, but is a white powder, which dissolves easily in water. It is much used as a non-irritating, mild antiseptic. It is not strong enough for all purposes, but is of much value, as it is practically non-poisonous. A heaping teaspoonful, dissolved in a glass of warm water, will make a solution of the strength of 4 to 100. It is a very efficient dry antiseptic when mixed with bismuth subnitrate or subcarbonate. Three teaspoonfuls of bismuth with one of boric acid make a very serviceable drying powder.

CARBOLIC ACID.

This is an efficient antiseptic, but poisonous, and also very irritating unless well diluted. It should never be used stronger than 1 in 30. This can be made by mixing one tablespoonful with a pint of water. It takes a little time and shaking for the mixture to be complete.

COLLODION.

This is a solution of gun-cotton in alcohol and ether, with a little castor-oil added to make the mixture flexible. It is a very nice covering for small cuts, much better in every way than plaster. It is a liquid which is quickly applied by means of a small brush or swab to the dried surface. The alcohol and ether evaporate in a few seconds, leaving a firm flexible film closely applied to the parts. This is not affected by water

MUSTARD PLASTER.

This is an excellent counter-irritant, and is of great value in many conditions. It is usually made too strong. One part of mustard to ten parts of flour is quite strong enough. This can be well mixed with enough cool water to make a moderately thick paste. The size should be liberal, care being taken that the paste is separated from the skin by one layer of muslin or linen. It can be kept on for three or four hours usually. After it is removed, the skin should be carefully dried and smeared with vaseline or some ointment. If an immediate effect is wanted, the paste should be made of equal parts of mustard and flour. This, however, cannot be endured longer than a few minutes, and its action is frequently not as deep or far-reaching as that of the milder paste.

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